SONY

HDCAM CAMCORDER

HDW-700A

HDCAM

MAINTENANCE MANUAL Part 1

1st Edition

Serial No. 10001 and Higher

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理など行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ.
Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

For the customers in the U.S.A. and Canada

RECYCLING NICKEL-CADMIUM BATTERIES

Nickel Cadmium batteries are recyclable. You can help preserve our environment by returning your unwanted batteries to your nearest point for collection, recycling or proper disposal.
Note: In some areas the disposal of nickel cadmium batteries in household or business trash may be prohibited.

RBRC (Rechargeable Battery Recycling Corporation) advises you about spent battery collection by the following phone number.

Call toll free number: 1-800-822-8837
(United States and Canada only)

Caution: Do not handle damaged or leaking nickel-cadmium batteries.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual part 1 of HDCAM camcorder HDW-700A. This manual is intended for use by trained system and service engineers, and is provided information required for the installation, maintenance information and information for service such as replacement of plug-in boards.

Related manuals

Besides this maintenance manual part 1, the following manuals are available. The part numbers for the manuals are as of January 1999.

- **Operation Manual (Supplied with this unit)**
  This manual is necessary for the use and the operation of this unit.
  Part No. : 3-201-477-01

- **Maintenance Manual Part 2 (Available on your request)**
  This manual is provided information that is premised the parts level service (adjustments, board layouts, schematic diagrams, detailed parts lists and the like.) for this unit. If this manual is required, please contact to your local Sony's sale/ service office.
  Volume 1 (Service Information , Replacement of Parts and Adjustments)
  Part No. : 9-968-535-01
  Volume 2 (Schematic Diagrams, Board Layouts, Block Diagrams, Exploded Views and Parts Lists).
  Part No. : 9-968-536-01

Contents

The maintenance manual part 1 is organized by following sections.

Section 1 Installation
This section is described about the information that is required to install (operating conditions, connection information, initial setting and the like.) and when installing this unit.

Section 2 Service Overview
This section is described about fundamental information that is required for service (removing of cabinet and cassette compartment, location of printed circuit boards and main parts, fixture and measuring equipments, and the like.), measures against trouble.

Section 3 Error Code and Error Message
This section is described about error messages and error code.

Section 4 Setup Menu
This section is described about the setup menu.

Section 5 File System
This section is described about the file system to control data.

Section 6 DIAGNOSTIC Mode
This section is described about the DIAGNOSTIC mode to confirm status of VTR block.

Section 7 Periodic Maintenance and Inspection
This section is described about the recommended periodic maintenance and the cleaning procedures.

Section 8 Spare Parts
This section is described about the repair parts list for the service parts of this unit, the packing materials list and the supplied accessories list.

Section 9 Overall Block Diagrams
This section is described about overall block diagrams.

Section 1
Installation

1-1. Operating Conditions

Operating temperature : 0˚C to 40˚C
Storage temperature : −20˚C to +60˚C
Humidity : No condensation allowed

Locations to avoid :

- Extremely hot or cold places
- Very humid places
- Places with strong vibrations
- Places with strong electric or magnetic fields
- Places exposed to direct sunlight for a long time or near heaters

1-2. Connectors

When connecting cables to the connectors during installation or maintenance work, use the following connectors or cables.

HDW-700 Connector/Panel indication	Matching Connector/Cable	Sony Part No.
GENLOCK IN TC IN TC OUT MONITOR OUT Y MONITOR OUT Pb MONITOR OUT Pr	BNC Coaxial Connector Plug	1-560-069-11
AUDIO IN CH1/CH2	XLR 3-pin, Male	1-508-084-00
AUDIO OUT	XLR 3-pin, Female	1-508-083-00
MC IN +48 V	XLR 3-pin, Male	1-508-084-00
DC IN	XLR 4-pin, Female	1-508-362-00
DC OUT 12 V	Round Type 4-pin, Male	1-566-425-11
REMOTE	Round Type 8-pin, Male	1-766-848-11

1-3. Input/Output Signals

Input

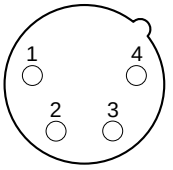
GENLOCK IN:	1.0 Vp-p, 75 Ω
TC IN:	0.5 V to 18 Vp-p, 10 kΩ
MIC IN +48 V:	−60 dBu
AUDIO IN CH-1, CH-2:	−60 dBu/+4 dBu (0 dBu = 0.775 Vrms)
DC IN:	DC 11 to 17 V

Output

MONITOR OUT:	1.0 Vp-p, 75 Ω, unbalanced
TC OUT:	1.0 Vp-p, 75 Ω
EARPHONE:	8 Ω, −∞ to−18 dBu variable
AUDIO OUT:	0 dBm (600 Ω terminatd)
DC OUT 12 V:	DC 11 to 17 V

DC IN : XLR, 4-pin (Male)

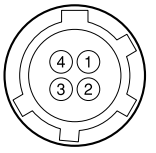
<External View>



Pin No.	Signal Designation
1	GND
2	—
3	—
4	BATT OUT (+)

DC OUT 12V: DIN, 4-pin(Female)

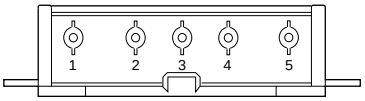
<External View>



Pin No.	Signal Designation
1	UNREG GND
2	—
3	—
4	UNREG +12 V

BATT IN: 5-pin (Male)

<External View>



Pin No.	Signal Designation
1	BATT IN (–)
2	BATT ID
3	BATT REM
4	LIGHT CONT
5	BATT IN (+)

LENS: 12-pin (Female)

<External View>

Pin No.	Signal Designation
1	RET (SW)
2	VTR TRIG
3	LENS GND
4	AUTO +5 V IN
5	IRIS CONT
6	UNREG +12 V
7	IRIS PSTN
8	REMOTE/LOCAL
9	EXTENDER
10	ZOOM PSTN
11	FOCUS PSTN
12	PROJ ON

VF: 20-pin (Female)

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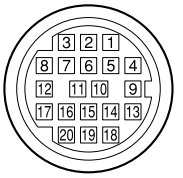
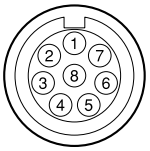


Pin No.	Signal Designation
1	SDA VF IN/OUT
2	—
3	—
4	SCL VF OUT
5	COLOR/BW IN
6	—
7	—
8	G TALLY
9	VF PEAKING CTL OUT
10	—
11	—
12	VF VIDEO (Y) OUT
13	VF VIDEO GND
14	VF VIDEO (Pb) OUT
15	VF VIDEO (Pr) OUT
16	—
17	R TALLY (UP)
18	—
19	VF GND
20	UNREG +12 V

REMOTE: 8-pin (Female)

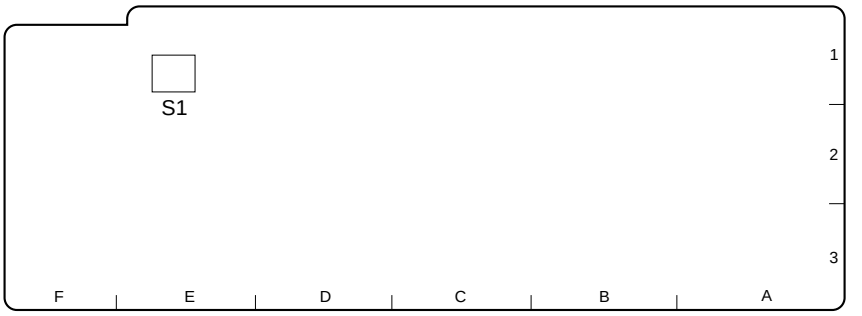
<External View>



Pin No.	Signal Designation
1	TX RCP DATA (X)
2	TX RCP DATA (Y)
3	RX RCP DATA (X)
4	RX RCP DATA (Y)
5	TX GND
6	UNREG +12 V
7	UNREG (GND)
8	Y
	CHASSIS GND

1-4. Settings of Board Switches and Short-circuit Pins

1-4-1. IF-667 Board

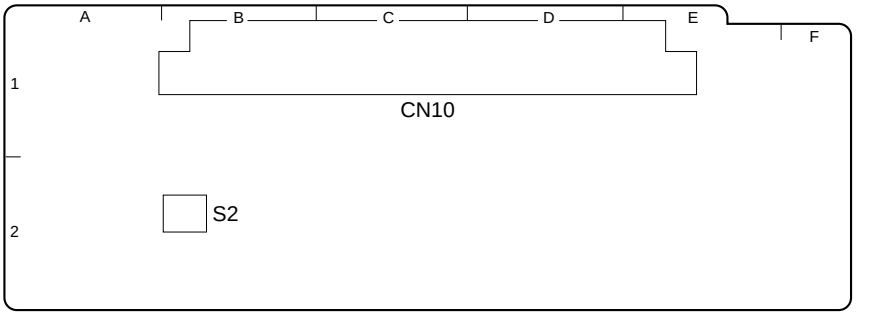


(Side B)

IF-667 Board Switch

Switch No.	Description	Factory setting
S1 1 to 4	Factory use	1, 3→ OFF 2, 4→ ON

1-4-2. SY-247 Board



(Side A)

SY-247 Board Switch

Switch No.	Description	Factory setting
S2 1 to 8	Factory use	OFF

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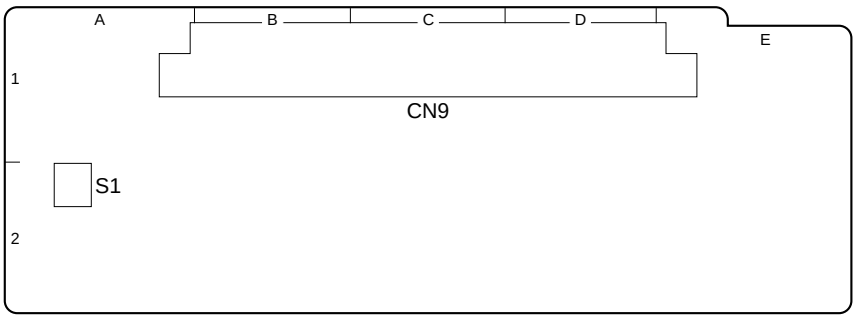
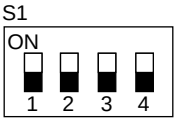
1-4-3. SV-185 Board



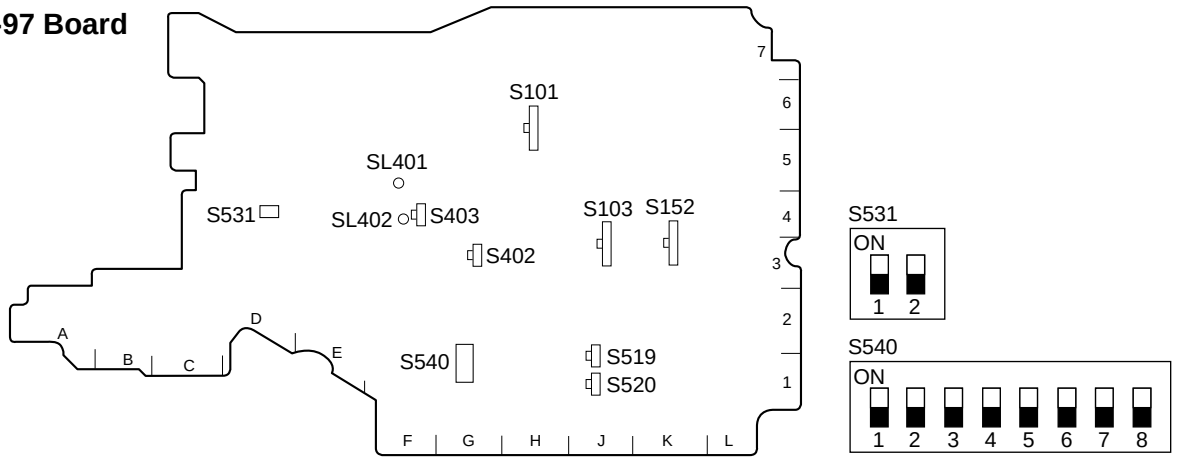
(Side A)

SV-185 Board Switch

Switch No.	Description	Factory setting
S1 1to 4	Factory use	OFF



1-4-4. TC-97 Board



(Side B)

Switches on TC-97 Board

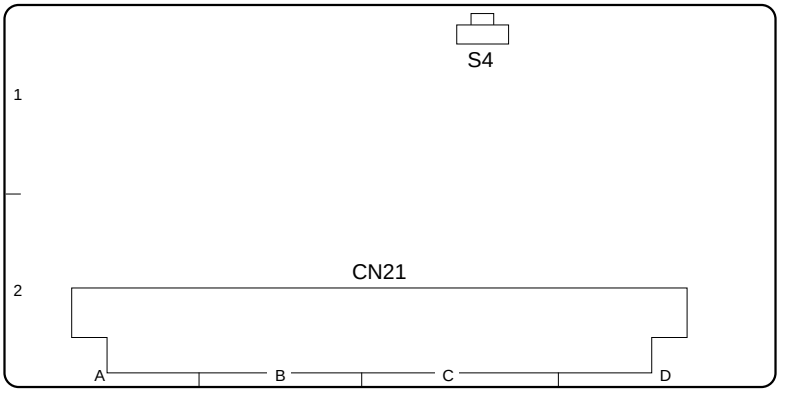
Switch No.	Designation	Description	Factory setting
S101	CH-1 FRONT MIC VR ON-OFF	Selects whether to adjust the REAR CH-1 audio input signal level by the FRONT MIC VR. ON : Adjust OFF : Not adjust	OFF
S103	CH-1 LIM ON-OFF	Selects whether to turn on or off the limiter in the CH-1 audio input stage. ON : CH1 Audio INPUT LIMITER ON OFF : CH1 Audio INPUT LIMITER OFF	OFF
S152	CH-2 LIM ON-OFF	Selects whether to turn on or off the limiter in the CH-2 audio input stage. ON : CH2 Audio INPUT LIMITER ON OFF : CH2 Audio INPUT LIMITER OFF	OFF
S402	OUTPUT LIM ON-OFF	Selects whether to turn on or off the output limiter. ON : Audio output LIMITER ON OFF : Audio output LIMITER OFF	ON
S403	CUE ON-OFF	Selects whether to feed the CUE signal or D/A signal to the audio output terminal in the PB mode. ON : Feed the CUE signal OFF : Feed the D/A signal	OFF
S519	EXT-LK UBIT INT-EXT	Selects whether to lock the user bit externally. INT : Not lock externally EXT : Lock externally	INT
S520	REAL TIME VITC-LTC	Select which user bit REAL TIME is recorded onto. VITC : U-BIT of VITC LTC : U-BIT of LTC	VITC
S531 1 to 2	—	Factory use	OFF
S540 1 to 7	—	Factory use	OFF
8	AUDIO SG MONITOR ON-OFF	Selects whether to feed the 1 KHz test signal to MONITOR OUT when the signal is selected. ON : Feed OFF : Feed	OFF

Slit Lands on TC-97 Board

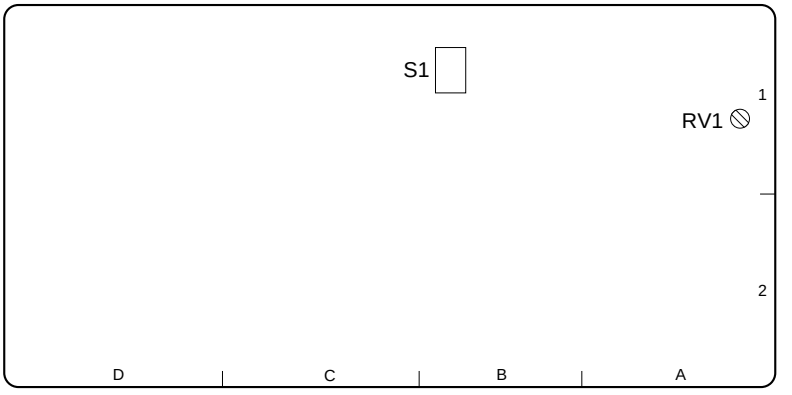
The slit lands are used for selecting the 0 dBm or +4 dBm output level.

Ref. No.	Output level (dBm/600 Ω)	
	+4 dBm	0 dBm (Factory setting)
SL401	SHORT	OPEN
SL402	SHORT	OPEN

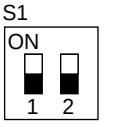
1-4-5. HN-243 Board



(Side A)



(Side B)



Switches on HN-243 Board

Switch No.		Designation	Description	Factory setting
S1	1	ADJ	Turns on or off the adjustment mode. ON : The adjustment mode ON OFF : The adjustment mode OFF	OFF
	2	TRK	Turns on or off the tracking control. ON : The tracking control volume (RV1) ON OFF : The tracking control volume (RV1) OFF	OFF
S4		REC head PB selector switch	Selects the normal REC or REC head PB. REC : Normal REC TEST : REC head PB	REC

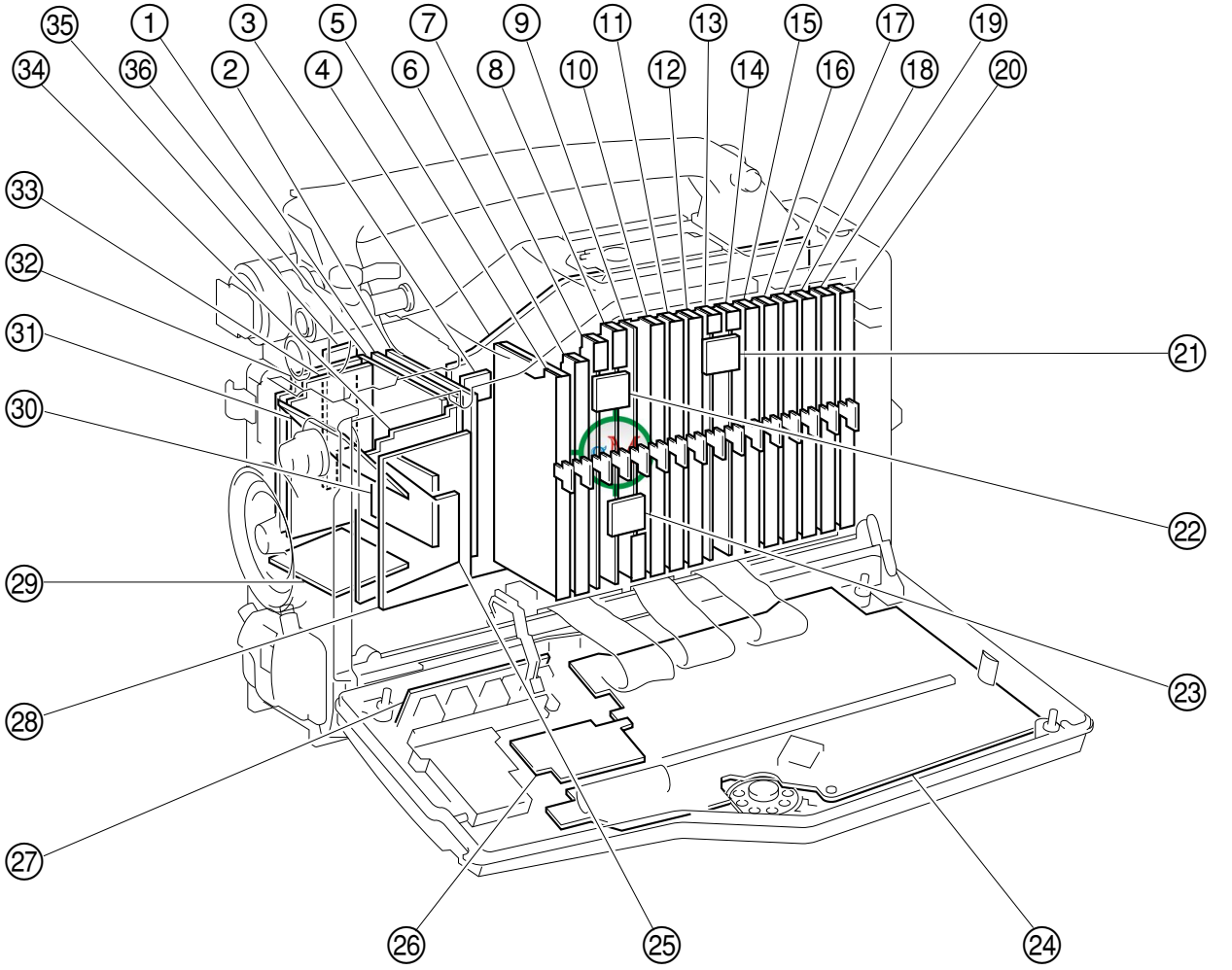
Section 2
Service Overview

2-1. How to clean the head when the head is clogged

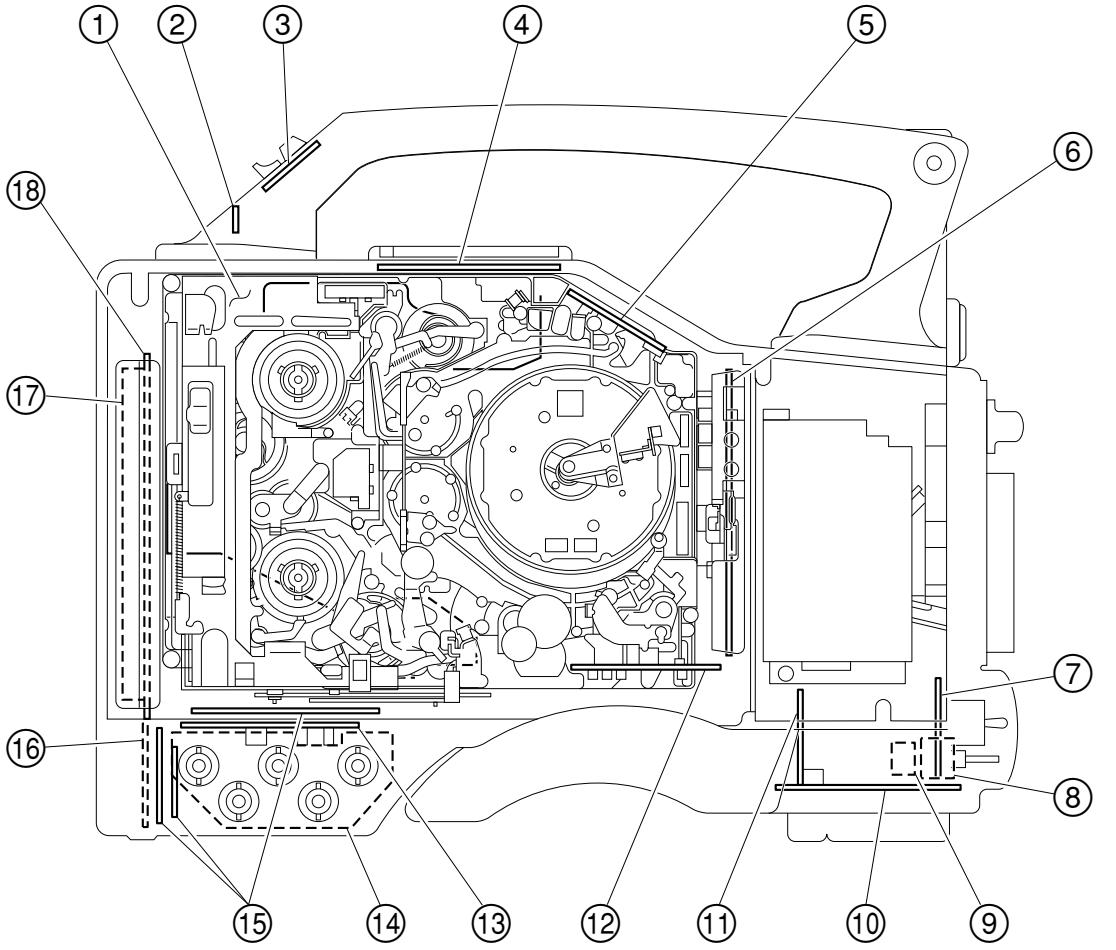
When the head is Clogged, refer to Section 5, Periodic Maintenance and Inspection for appropriate head-cleaning.

2-2. Main Parts Location and Circuit Configuration

2-2-1. PC Board Location

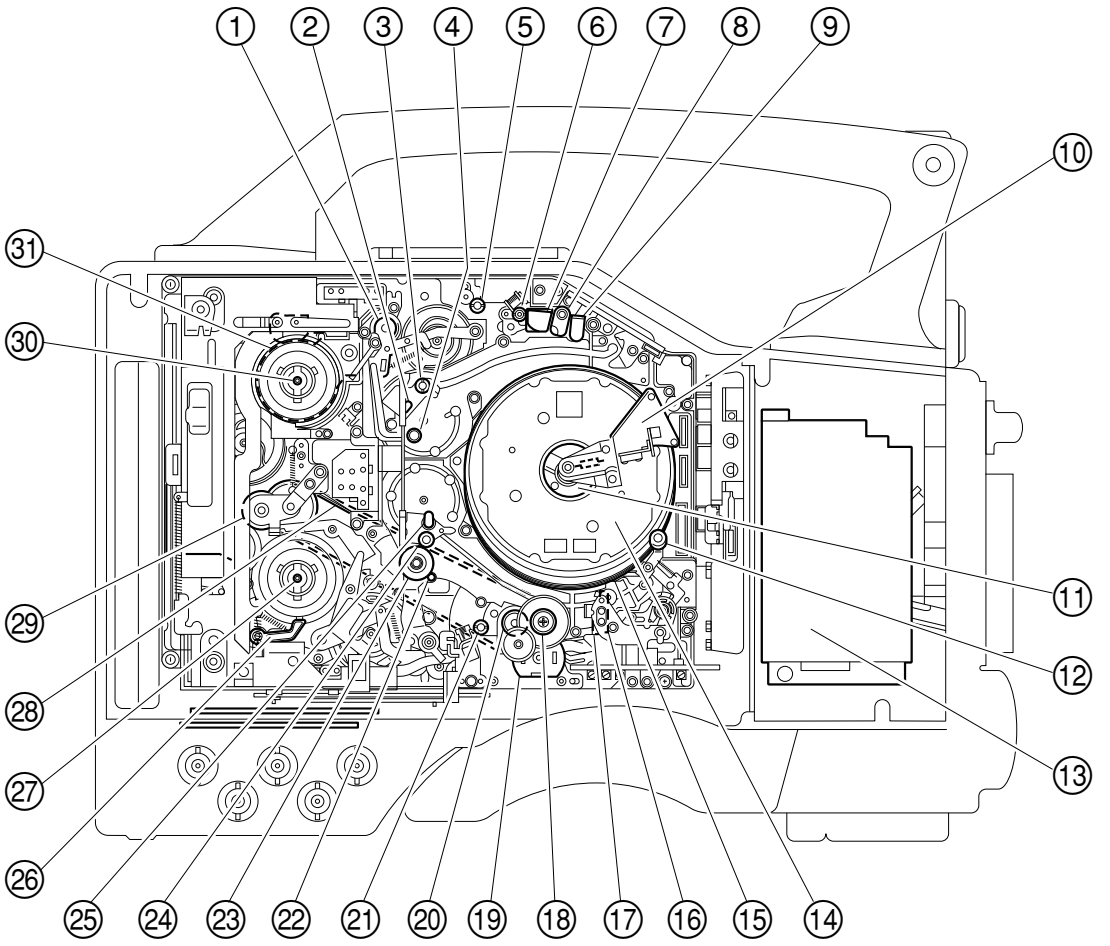


System Configuration	Board Name	Circuit Function	No.
CCD unit	BI-132 (B)	CCD block	㉛
	BI-132 (G)	CCD block	㉚
	BI-132 (R)	CCD block	㉙
	CN-1432	CCD block	③
	CN-1757	CCD block	㉕
	DR-383	CCD block	㉞
	DU-19	CCD block	㉟
	NR-67	CCD block	㉝
	PA-204	CCD block	㉜
	RP-109	CCD block	①
	SH-73	Black shading, White shading circuit	②
	TG-210	CCD block	㊱
Camera	AD-145	Flare, PRE knee, White clip, Black clip, PRE filter, A/D converter	⑦
	CN-1506	Relay board for AD-145 board and DPR-98 board	㉒
	CN-1507	Relay board for DPR-98 board and DA-127 board	㉓
	CN-1614	Filter	㉘
	DA-127	Post filter, D/A converter	⑨
	DPR-98	CVP (Digital processing), FIL (Rate convert)	⑧
	IF-667	System controller, Fan controller	⑫
	RE-145	Power supply, Regulator (CCD block)	⑤
	SG-255	GEN lock, Timing pulse generator (CTG), Character generator	⑪
	VA-180	Video amp, Black set, White gain, White shading compenstator	⑥
	VDA-40	Monitor out, VF out, Character mix, Marker mix, Zebra mix, Skin marker mix	⑩
Video	DEC-95	ECC/BRR decoder	⑱, ⑲
	EN-134	BRR encoder (B), Timing generator	⑯
	ENC-44	BRR encoder (A), ECC encoder	⑮
	EQ-69	RF equalizer	⑳
	VN-11	Concealment	⑰
Servo	SV-185	Servo controller	⑬
System control	SY-247	System controller for VTR block	⑭
Time code, Audio	TC-97	Timecode controller, Audio processor	㉔
Others	CN-1457	Relay board for SV and SY	㉑
	CP-319	Connector panel	㉗
	MB-743	Mother board	④
	VR-175	Memory card, Audio select switch, Alarm level, Monitor level	㉖



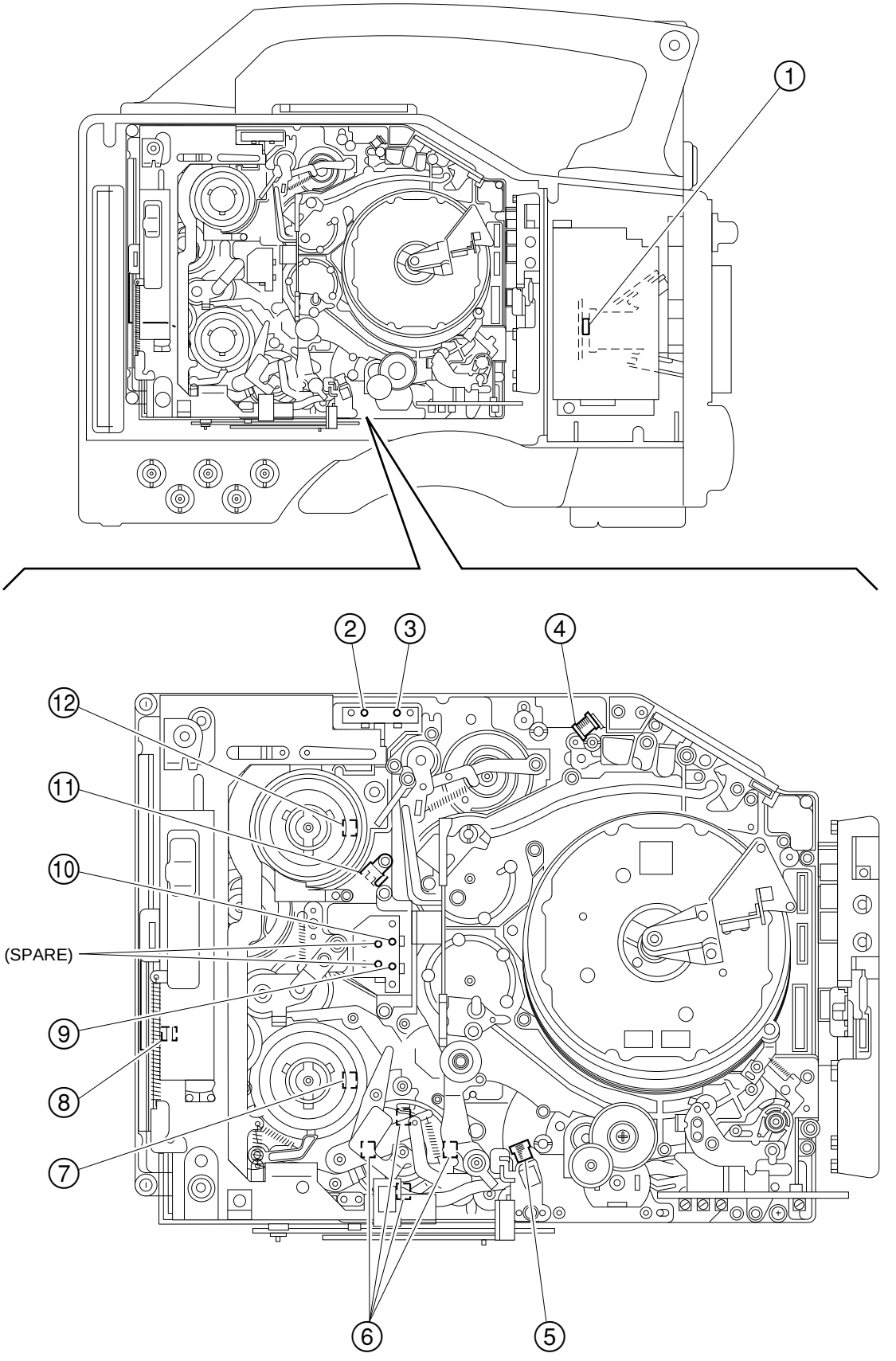
System Configuration	Board Name	Circuit Function	No.
Head	CTL-10	CTL head amp	⑤
	CUE-2	CUE head amp	⑫
	HN-243	Harness, Erase head amp, TC head amp	⑥
Mic	CN-1642	Connector board for Camera mic	⑪
	MA-92	Camera mic amp	⑩
	SW-911	VTR S/S switch, Shutter switch, ABB/AWB switch	⑦
	SW-912	Rotary encoder switch	⑧
Connector box	CN-1482	Connector board for Audio IN/OUT & EXT DC IN/OUT	⑮
	CN-1483	Connector board for Monitor OUT, EXT TC IN/OUT	⑭
	CO-30	Connector (Genlock IN, Remote)	⑯
	PS-483	Power supply, Circuit breaker	⑬
Power supply	RE-139	Power supply, Regulator (VTR)	⑰
	RE-140	Power supply, Regulator (VTR)	⑱
Others	HP-90	Headphone	②
	KY-293	Function key	④
	PSW-29	Power switch	⑨
	SE-275	Tape sensor, DEW sensor	①
	SW-914	Back tally, Back tally switch	③

2-2-2. Location of Main Mechanical Parts



1 : Tension regulator arm
2 : S1 tape guide (on S slider)
3 : S2 tape guide (on S slider)
4 : Tension regulator guide (S4 tape guide)
5 : S5 tape guide
6 : S3 tape guide
7 : Full erase head
8 : Tape cleaner
9 : CTL head
10 : Brush
11 : Slip ring
12 : Video head cleaner
13 : CCD block
14 : Upper drum
15 : Lower drum
16 : CUE head cleaner
17 : CUE/TC head
18 : Manual eject knob
19 : Threading motor
20 : Capstan motor
21 : T3 tape guide
22 : T drawer guide
23 : Pinch roller
24 : T2 tape guide (on T slider)
25 : T1 tape giude (on T slider)
26 : T soft brake
27 : T reel table
28 : Timing belt
29 : Gear
30 : S reel table
31 : Brake band

2-2-3. Location/Functions of Sensors



http://getMANUAL.com

1 : Temperature Sensor

This sensor detects the temperature to perform black correction.

2 : Cassette-in sensor

This sensor detects whether a cassett is in.

3 : REC INHIBIT sensor

This sensor detects the REC inhibiting plug of the cassette tape.

4 : Tape end sensor

This sensor detects the end of the tape running in the forward direction.

5 : Tape top sensor

This sensor detects the end of the tape running in the REW direction.

6 : Function cam sensor

This sensor detects the rotation position of a cam.

7 : Take-up reel table rotation sensor

This sensor detects the rotation of the take-up reel table. The FG output signal of this sensor is fed to a servo circuit so as to calculate the winding diameter of the tape.

8 : Cassette lock sensor (switch)

This sensor detects whether the cassette compartment is locked.

9 : Tape thickness sensor

Using a tub on the back side of the cassette tape, this sensor detects the thickness of the tape wound on a cassette tape that is being inserted into the unit.

10: Reel hub diameter sensor

The reel hub diameter of a cassette tape varies depending on the length of the tape wound on the cassette tape. The reel hub diameter sensor detects the reel hub diameter by the tab on the back side of the cassette tape. The output signal of this sensor is fed to a servo circuit so as to calculate the winding diameter of the tape.

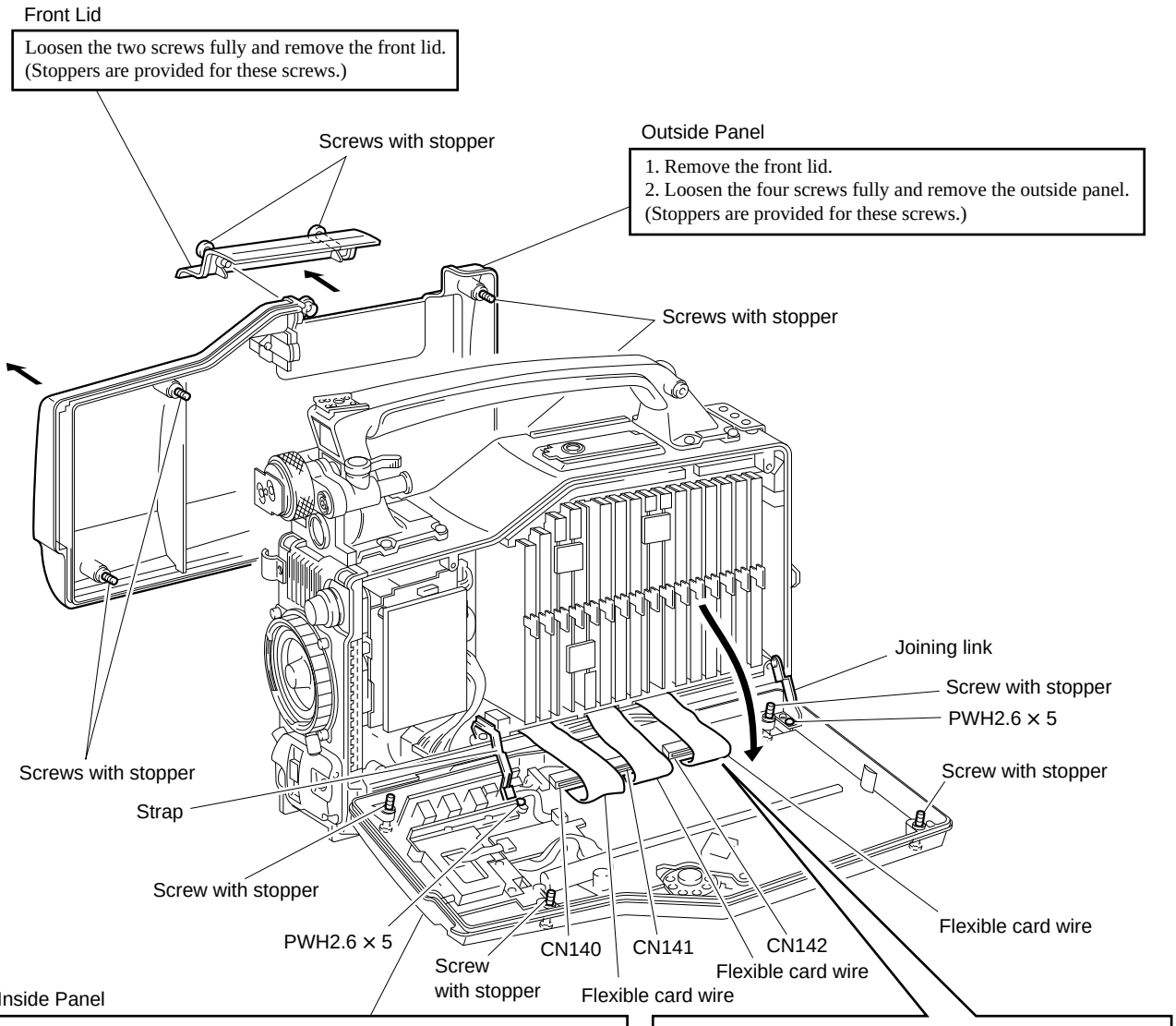
11: Condensation sensor

This sensor detects whether condensation occurs in the unit.

12: Supply reel table rotating sensor

This sensor detects the rotation of the supply reel table. The FG output signal of this sensor is fed to a servo circuit so as to calculate the winding diameter of the tape.

2-3. Removal and Installation of Exterior Parts


Front Lid
Loosen the two screws fully and remove the front lid.
(Stoppers are provided for these screws.)
Screws with stopper
Outside Panel
1. Remove the front lid.
2. Loosen the four screws fully and remove the outside panel.
(Stoppers are provided for these screws.)
Screws with stopper
Joining link
Screw with stopper
PWH2.6 × 5
Screw with stopper
Screws with stopper
Strap
Screw with stopper
Flexible card wire
PWH2.6 × 5
CN140
CN141
CN142
Screw
with stopper
Flexible card wire
Flexible card wire
Inside Panel
1. Loosen the four screws fully and turn the inside panel in the arrow direction.
(Stoppers are provided for these screws.)
2. Disconnect the three flexible card wires from the connectors
(CN140, 141, 142).
3. Remove the strap screw (PWH2.6 × 5).
4. Remove the joining link screw (PWH2.6 × 5).
Connector
A
*
*
Flexible card wire
Conductor side
Blue (Insulator side)
How to disconnect
Slide the two sections marked * of the connector in the direction of the arrow (white), and disconnect the flexible card wire.
How to connect
1) Lift the two sections marked * of the connector in the direction of arrow A, and insert the flexible card wire fully.
2) Push in the two sections marked * of the connector in the direction of the arrow (black).

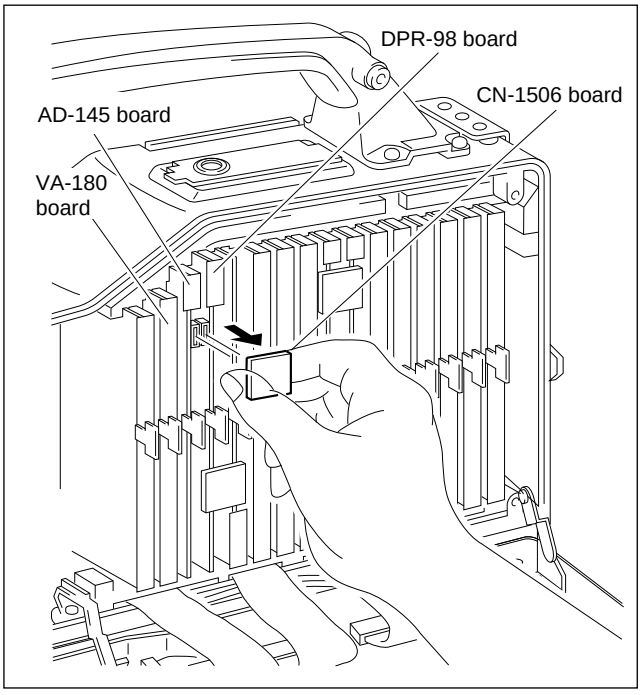
2-4. Plug-in Board Removal and Installation

2-4-1. Removing/Installing the Relay Boards (CN-1506/1507/1457)

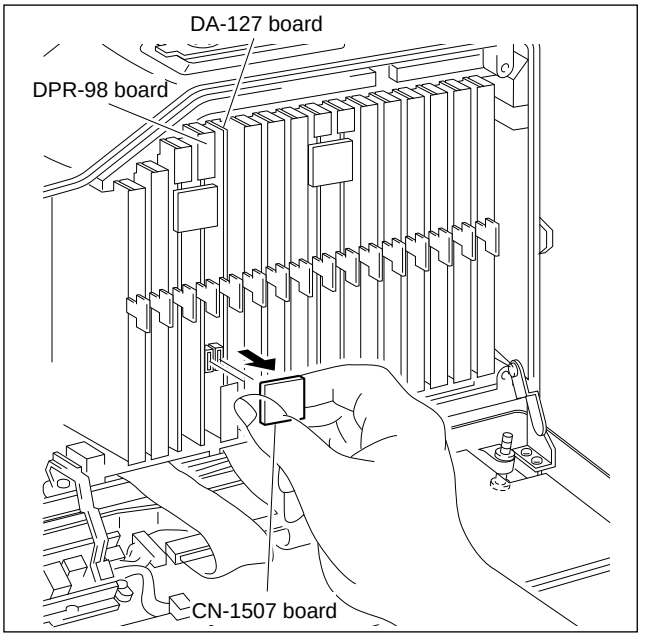
The boards are located in front of the AD-145, DPR-98, DA-127, SV-185, and SY-247 boards. When removing these boards, the relay boards must be removed before hand.

Removal

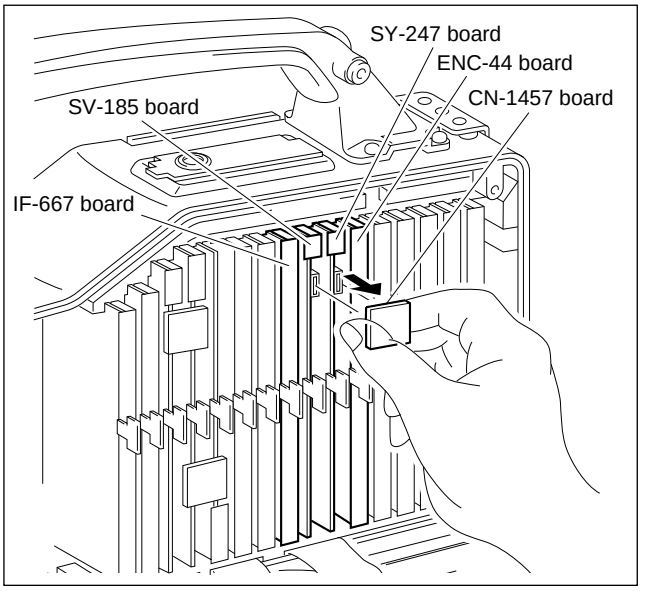
1. CN-1506 board
   Pull out the VA-180 and the CN-1506 boards in the direction of the arrow, as shown.



2. CN-1507 board
   Pull out the CN-1507 board in the direction of the arrow, as shown.



3. CN-1457 board
   Pull out the IF-667 and ENC-44 boards, and then the CN-1457 board in the direction of the arrow, as shown.



Installation

1. Re-insert the boards firmly and slowly.
   Note
   Make sure that they are inserted completely.
2. Adjust the positions of the connectors of the boards and insert them firmly and slowly.

2-4-2. Removing and Installing the Plug-in Board

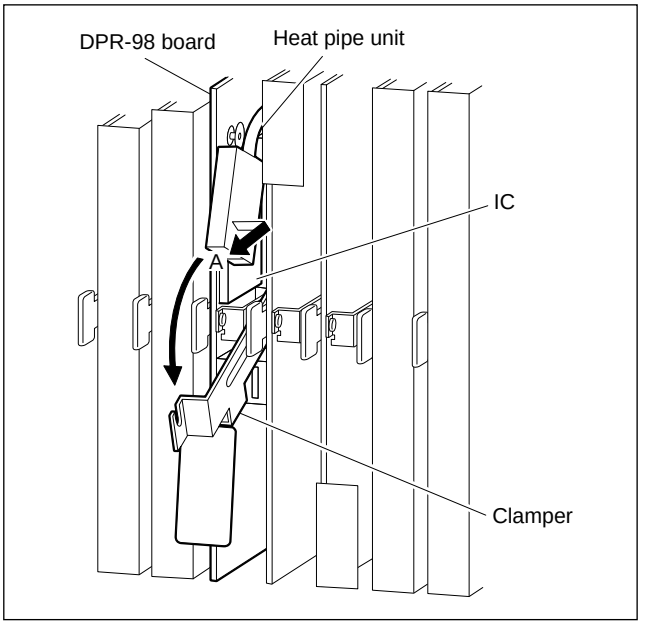
Note

When removing the DA-145, DPR-98, DA-127, SV-185 and SY-247 boards, remove the relay boards (CN-1457, CN-1506 and CN-1507 boards) attached in front of these boards first.

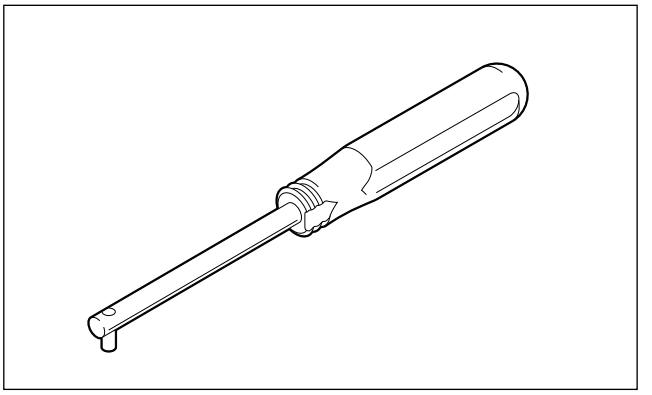
Note

Before pulling out the DPR-98 board, peel off the heat pipe unit from the IC by moving it in the arrow A direction first.

For the DPR-98 board, after removing the relay board, the clamper securing the heat pipe unit must be removed. After removing the clamper in the direction of the arrow, pull out the board carefully as pulling out the board pushes out the heat pipe unit.

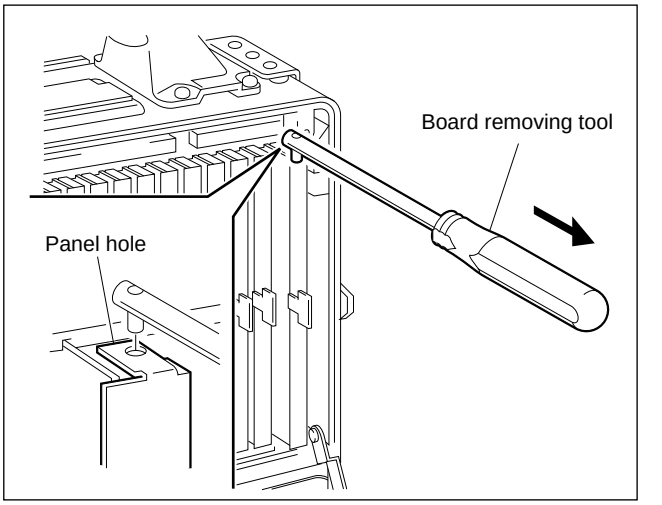


Use of the following board removing tool is recommended for removing the board from the unit.
Board removing tool (Sony Part No.:J-6309-350-A)

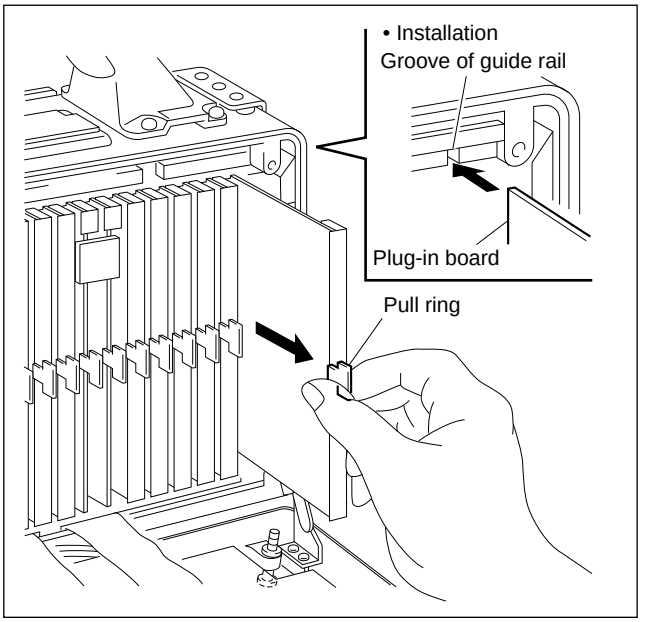


Removal with the Tool

1. Insert the board removing tool in the hole on the panel at the top of the board, move the tool in the direction of the arrow, and disconnect the connector connected to the mother board.

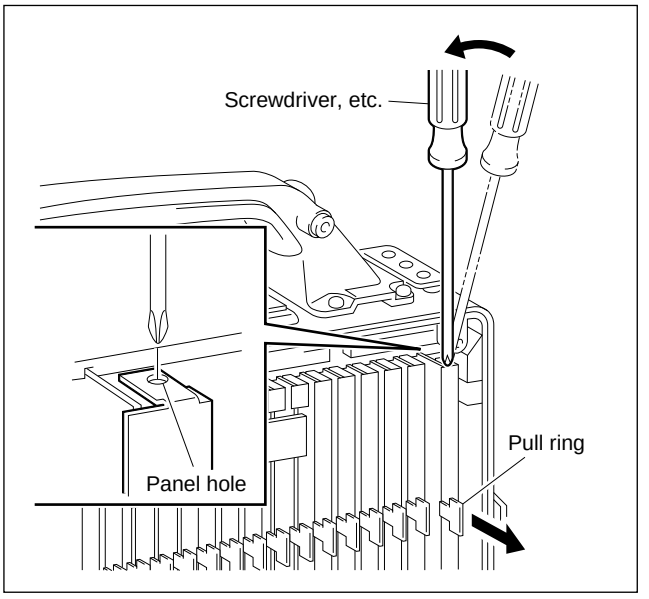


2. Remove the board from the unit by holding the pull ring in front of the board.



Removal Without the Tool

1. Insert a screwdriver having a small tip into the panel hole on the top of the board, move the tool in the direction of the arrow, and disconnect the connector connected to the mother board.



2. Holding the pull ring in front of the board, remove the board from the unit

Installation

1. Insert the board according to the board guide rails at the top and bottom of the unit.
2. Hold the top and bottom of the board firmly, and insert the board connector into the mother board.

2-5. Cassette Compartment Aseembly Removal and Installation

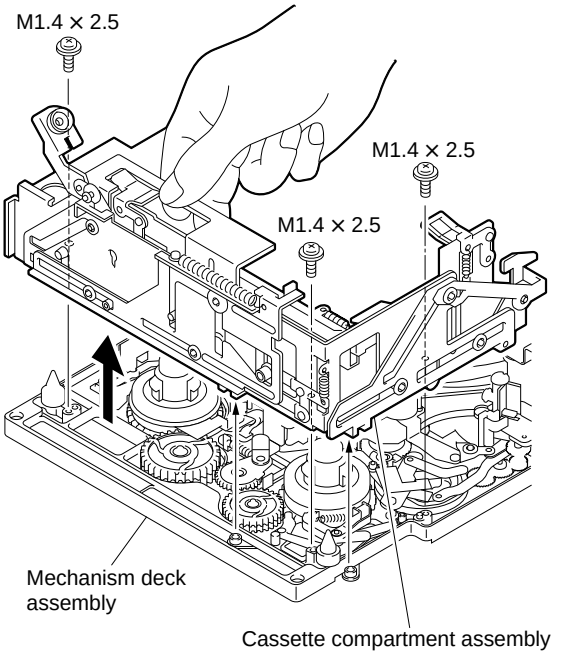
Notes

- Turn off the power before removing or installing the cassette compartment.
- The cassette compartment can be removed in the raised or lowered status.

Removal

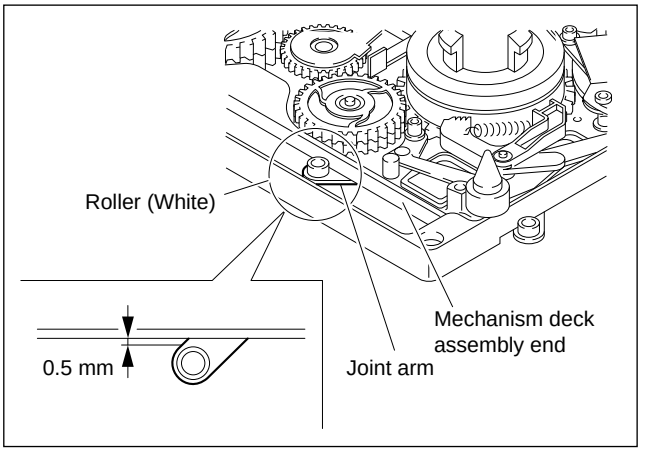
1. Remove the front lid and the outside panel. (Refer to Section 2-3.)
2. Remove the three screws, hold the cassette compartment as shown, and remove it in the arrow.

∗ The frame of the unit is not shown in the figure.

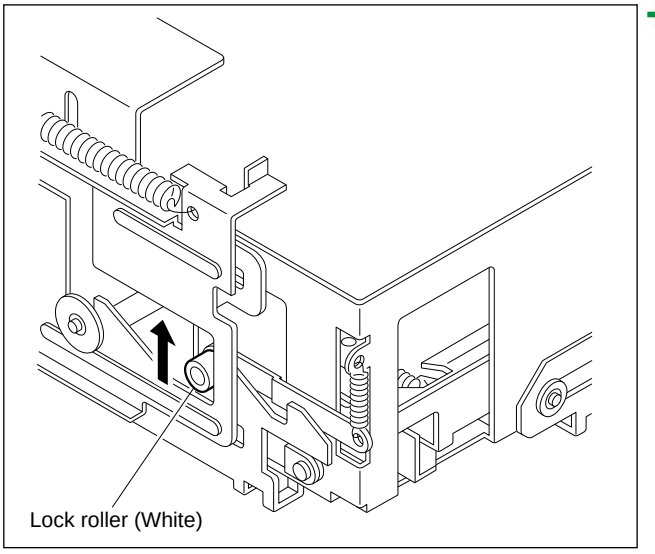


Installation

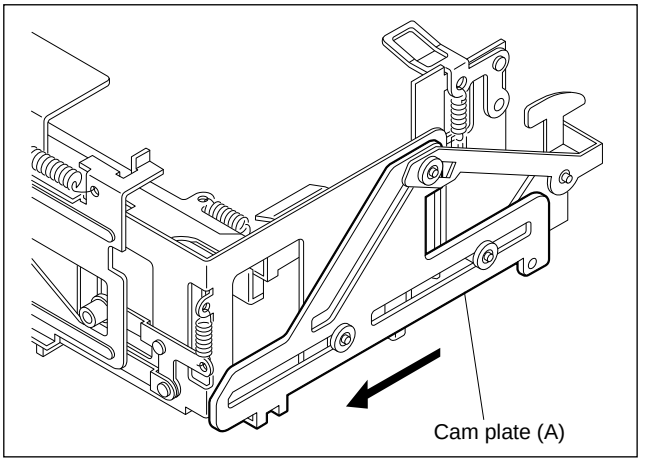
1. Adjust the position of the joint arm so that the clearance between the white roller of the joint arm and the edge of the mechanism deck assembly is 0.5 mm, as shown.



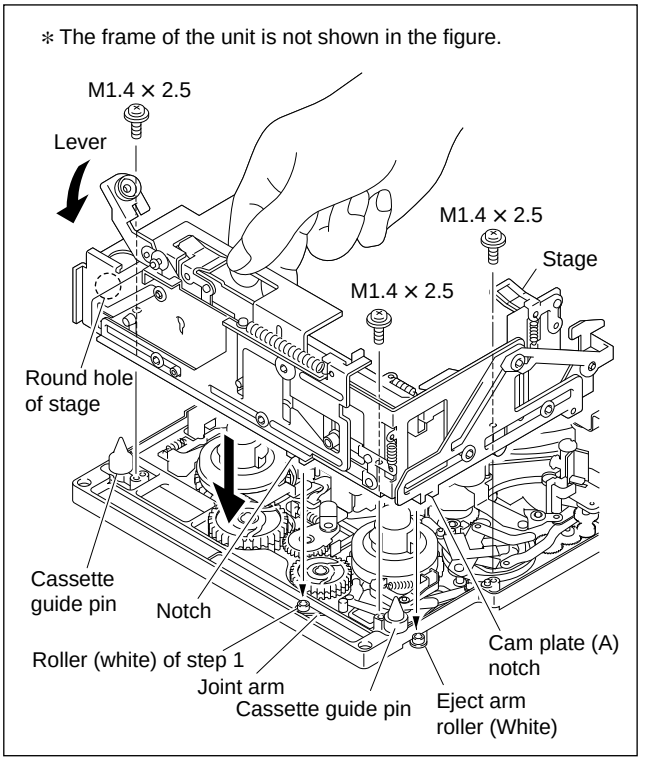
2. Raise the white lock roller of the cassette compartment in the direction of the arrow to bring it into the raised position.



3. Move the cam plate (A) on the right side of the cassette compartment in the direction of the arrow with your fingers until it stops.

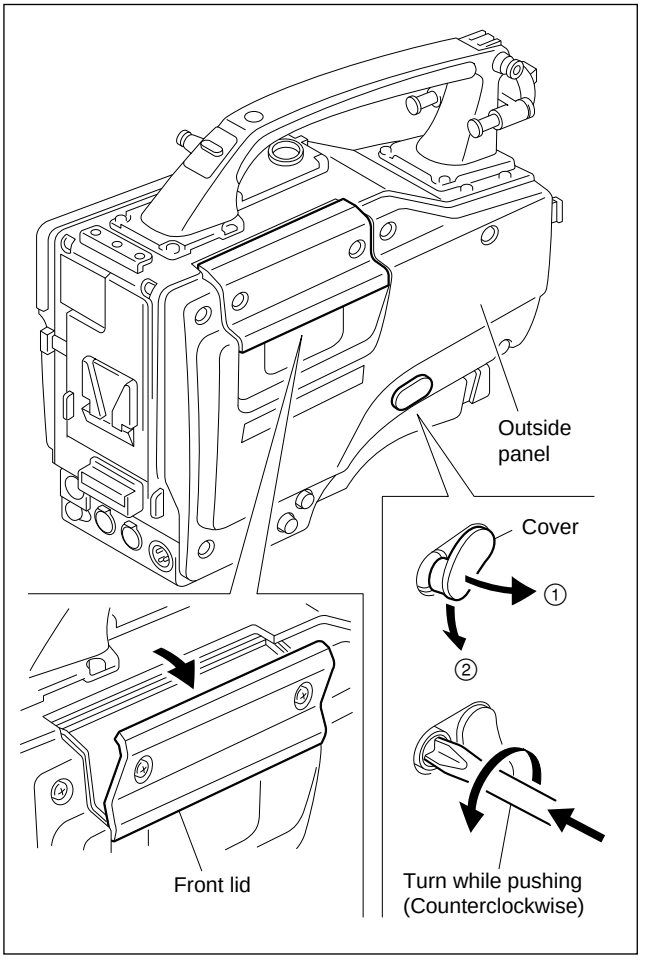


4. Hold the cassette compartment as shown, and attach the two cassette guide pins in the chassis so that they go inside the round holes of the stage.
   At the same time, make sure that the white roller of the joint arm of step 1 stays inside the notch of the cam plate (A) on the right side.
5. Push the lever of the cassette compartment and make sure that the stage moves up and down smoothly. If not, check from step 1 again.
6. Attach the cassette compartment with the three screws.



2-6. Ejecting the Cassette Tape Manually

1. Turn off the power switch.
2. Open the cover of the outside panel as shown.
3. Turn the gear counterclockwise until the front lid opens while pushing the gear using a Phillips type screwdriver.
4. The front lid opens and the cassette tape can be ejected.

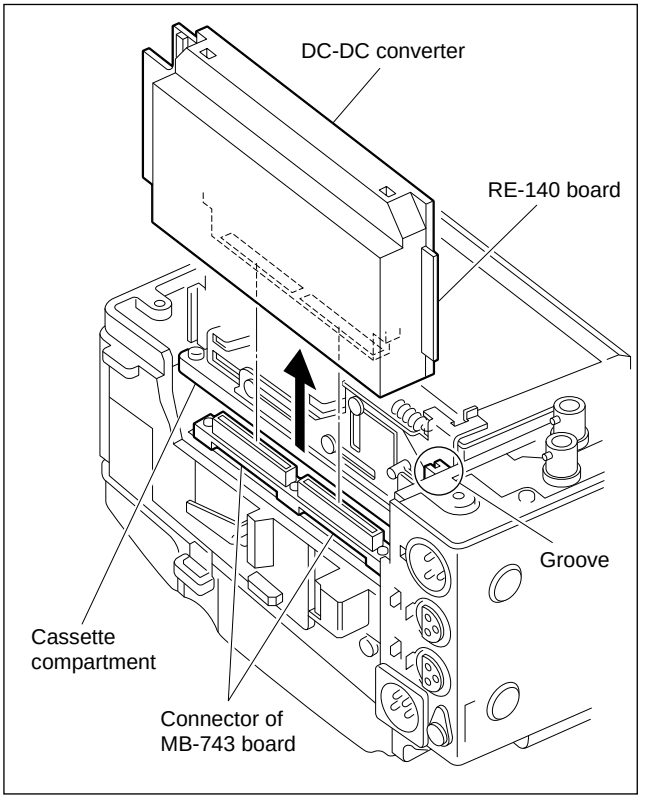


Note

- Do not turn the gear after the front lid has opened.
- Closing the front lid
  The front lid cannot be closed and locked in the above status.
  Perform either of the following steps to close and lock the front lid.
  (1) Turn on the power switch.
  (2) Turn the gear slightly in the clockwise direction.

If the foregoing steps cannot be performed, perform the following procedure.

1. Remove the front lid and outside panel.
   (Refer to section 2-3.)
   Remove the DC-DC converter in the direction of the arrow.



2. With the cassette lid of the tape raised, raise the cassette compartment. (For details of how to raise the cassette compartment, refer to section 2-6.)
3. Remove the cassette tape carefully to prevent damage.

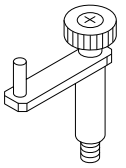
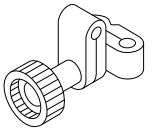
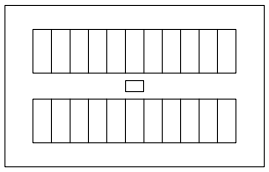
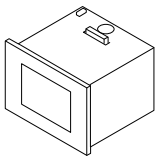
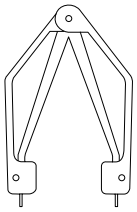
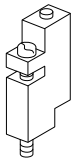
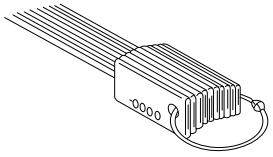
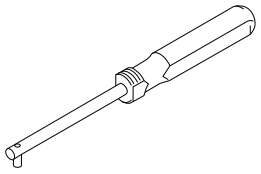
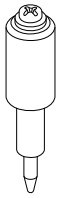
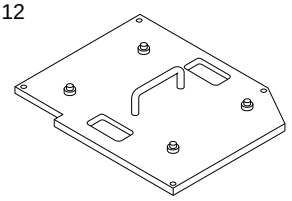
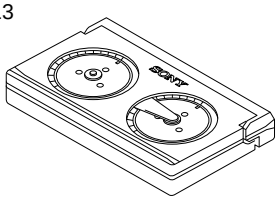
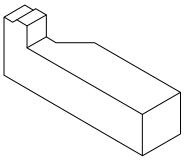
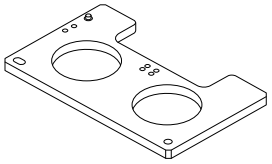
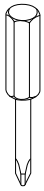
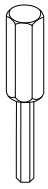
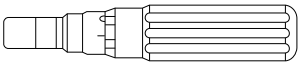
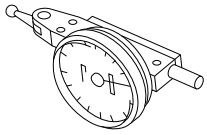
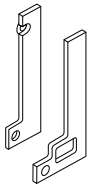
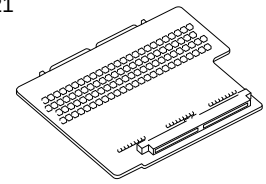
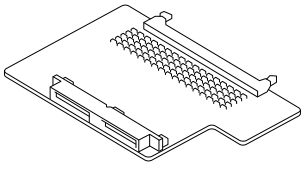
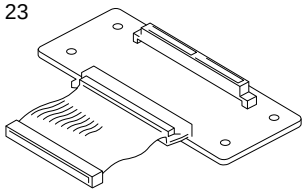
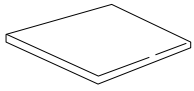
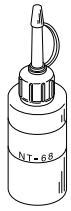
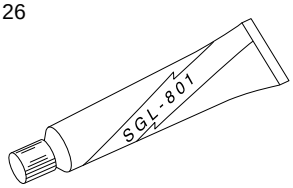
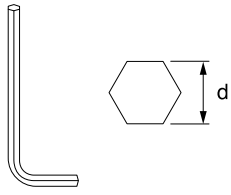
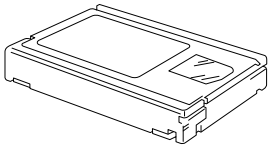
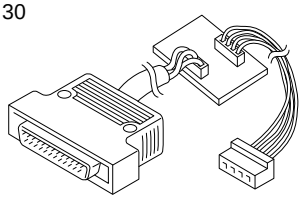
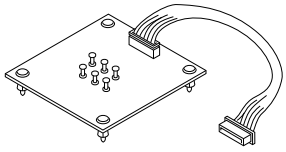
Note

When installing the DC-DC converter, make sure that the position and direction of the RE-140 board are appropriate, and then insert it into the groove of the chassis.

2-7. Fixtures and Measuring Equipment for Adjustment

2-7-1. Fixtures

Fig. No.	Part No.	Description	Purpose
1	J-6001-820-A	Drum eccentricity gauge (3)	To adjust upper drum eccentricity
2	J-6001-830-A	Drum eccentricity gauge (2)	
3	J-6394-080-A	Gray scale chart	To adjust camera gamma
4	J-6029-140-A	Pattern box PTB-500	To adjust camera
5	J-6035-070-A	IC extraction tool	To remove PLCC IC
6	J-6080-840-A	Mirror (Small round shape)	To adjust video tracking
7	J-6087-000-A	Drum eccentricity gauge (5)	To adjust upper drum eccentricity
8	J-6152-450-A	Wire clearance check gauge	To check clearance
9	J-6309-350-A	Board extraction tool	To remove card board
10	J-6322-420-A	Tape guide adjustment screwdriver	To adjust tape path
	J-6322-420-3	Bit (0.89 across)	
11	J-6323-530-A	Stop washer insertion tool	To attach stop-washer
12	J-6323-750-A	MB dummy tool	To replace frame
13	J-6323-890-A	FWD back tension measuring cassette	To adjust FWD back tension
14	J-6324-150-A	Reel table height gauge	To adjust reel table height
15	J-6324-170-A	Cassette reference plate (1)	
16	J-6325-110-A	Torque screwdriver bit (M1.4)	To tighten screw
	J-6325-380-A	Torque screwdriver bit (M2)	
17	J-6326-120-A	Hexagonal bit (d=1.5 mm)	
18	J-6325-400-A	Torque screwdriver (3 kg)	
19	J-6325-530-A	Upper drum eccentricity adjustment tool (6)	To adjust upper drum eccentricity
20	J-6480-040-A	Tool, side panel dummy	To replace CCD block
21	J-6420-260-A	Extension board EX-410	To check/adjust card board
22	J-6420-900-A	MB conversion board	To check HN board operations
23	J-6420-930-A	Mechanism deck extension harness Pin 100	To mechanism deck
24	3-184-527-01	Cleaning cloth	To clean
25	7-661-018-18	Oil (NT-68)	To lubricate
26	7-651-000-11	Sony grease (SGL-801)	
27	7-700-736-05	Hexagon wrench (d=1.5 mm)	To remove screw
	7-700-736-06	Hexagon wrench (d=0.89 mm)	
28	8-960-076-01	Alignment tape HR5-1A	To adjust audio/video
	8-960-076-11	Alignment tape HR2-1A	To adjust video tracking
29	9-919-573-01	Head cleaning liquid	To Clean
30	J-6510-120-A	RS-232C interface cable	To upgrade software version
31	J-6510-150-A	RF envelope tool	To adjust RF error rate

1 	2 	3 	4 
5 	6	7 	8 
9 	10	11 	12 
13 	14 	15 	16  17 
18 	19 	20 	21 
22 	23 	24 	25 
26 	27 	28 	29
30 	31 		

2-7-2. Measuring Equipment

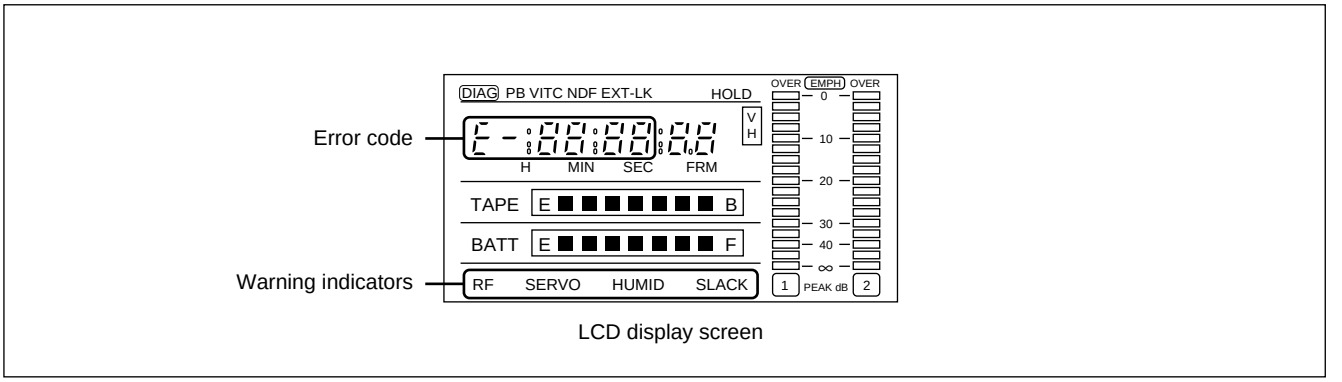
Use of the measuring equipment listed below or equivalent is recommended.
All the measuring equipment listed is available commercially.

Equipment	Model Name	Remarks
AC adaptor or battely	SONY AC-550	
Oscilloscope	TEKTRONIX 2465B	
Wave Form/Vector Monitor	TEKTRONIX 1735 HD	
Audio Analyzer	TEKTRONIX AA501A (OP.02)	for measuring distortion and levels
Audio Level Meter	HEWLETT PACKARD HP3400A	
Low Frequency Oscillator	HEWLETT PACKARD HP8904	
Frequency Counter	ADVANTEST TR5821AK	
Digital Voltmeter	ADVANTEST TR6845	
Black and White Monitor (Horizontal resolution more than 900) Color Monitor	SONY HDM-14E5 (for NTSC)	

http://getMANUAL.com

Section 3
Error Code and Error Message

3-1. Error Code



LCD display screen

WARNING INDICATORS

The warning indicators on the LCD display screen light when a fault occurs during the power-on-sequence or normal operation.

RF : Lights when the video heads are clogged.
SERVO : Lights when the servo is out of control.
HUMID : Lights when condensation occurs on the head drum
SLACK : Lights when the tape is not wound properly or other problems occur.

ERROR CODES

When SLACK on the warning indicators lights, its error cause and error mode are displayed on the LCD display screen.

E-xxxx

MODE
01:REC
02:REC PAUSE
03:THREAD
04:UNTHREAD
05:STOP
08:PLAY
09:FF
0A:REW
0b:REC REVIEW
0C:CUE UP
0E:FF SEARCH
0F:REW SEARCH

ERROR CAUSE
10:Drum drive voltage abnormality
11:No drum FG detected
12:No drum PG detected
20:Capstan drive current abnormality
21:No capstan FG-A detected
22:No capstan FG-B detected
32:No S reel FG detected
42:No T reel FG detected
61:Excessive function cam rotation time in the forward direction
68:Threading motor voltage abnormality

3-2. Error Message

The error message is superimposed on the viewfinder screen when faults occur during the power-on sequence or normal operations.

Error Message	Operation	Remedy
? (Blinking)	During power-on sequence	A fault has been detected in the camera or VTR (HUMID or SLACK). Open the DIAG DISP menu and check the unit.

Section 4
Setup Menu

4-1. Setup Menu

The setup menu is used for selecting various setting values, items displayed on the viewfinder screen, the method of displaying, and adjustments. The menu is displayed on the viewfinder screen. The menu can also be displayed by the signals from the MONITOR OUT connector.

Structure of Setup Menu

The setup menu is composed of the following menus.

- OPERATION menu
- PAINT menu
- MAINTENANCE menu
- FILE menu
- INDEX menu
- DIAG DISP menu

Selecting the Menu

The menus to be displayed on the viewfinder screen can be selected by the switches on the IF-667 board (S1-1 to S1-4).

( ) :Shows the factory setting

Switch Settings / Setup Menu

S1-1	S1-2	S1-3	S1-4	OPERATION	PAINT	MAINTENANCE	FILE	INDEX	DIAG DISP
OFF	OFF	OFF	OFF	Yes	No	No	No	No	No
OFF	OFF	OFF	ON	Yes	Yes	No	No	No	No
OFF	OFF	ON	OFF	Yes	Yes	Yes	No	No	No
OFF	OFF	ON	ON	Yes	Yes	Yes	Yes	No	No
OFF	ON	OFF	OFF	Yes	Yes	Yes	Yes	Yes	No
(OFF)	(ON)	(OFF)	(ON)	Yes	Yes	Yes	Yes	Yes	Yes

Equipment Required

2-inch viewfinder HDVF-20 (or black-and-white monitor)
A battery, or an AC adapter AC-550, etc. for supplying the power to the camera adapter.

Switches

VF DISP switch

ON : Displays characters and messages indicating the settings and operating status of the unit on the viewfinder screen.

OFF : Turns off all the displays on the viewfinder screen.

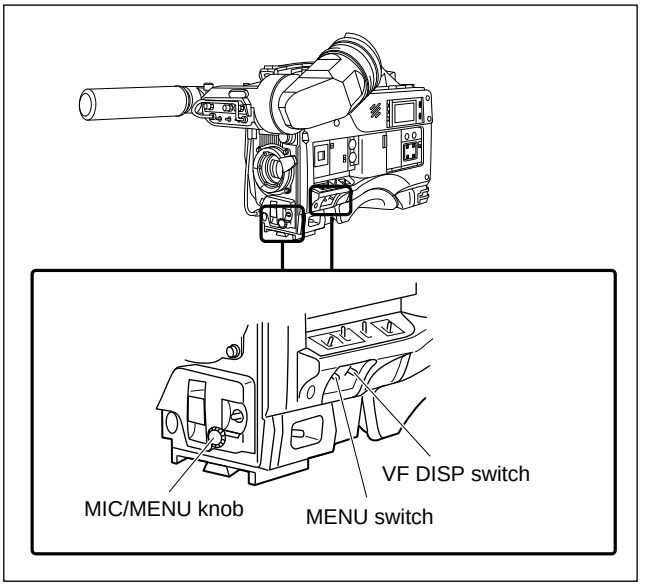
MENU : Displays the setup menu on the viewfinder screen.

MIC/MENU knob

Selects the items displayed on the viewfinder screen and changes settings.

MENU switch

CANCEL : Cancels the menu setting mode and returns to the page selection mode or TOP menu.



Reference

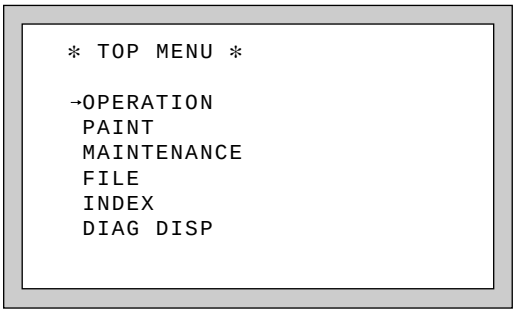
The TOP menu screen displays all the menu items. To display the TOP menu, turn the VF DISP switch from OFF to MENU while pressing the MIC/MENU knob.

Basic Operations

1. Displaying the menu
   To display the Operation menu, set the VF DISP switch to MENU.
   To display the other menus, first turn the VF DISP switch from OFF to MENU while pressing the MIC/MENU knob, and obtain the TOP menu screen. Rotate the MIC/MENU knob, select the menu to be displayed, and press the MIC/MENU knob.
2. To change pages, rotate the MIC/MENU knob with the scroll bar displayed at the top right. (When the MIC/MENU knob is pressed, the mode is set to the item selection, and the scroll bar disappears.)
3. To change items, rotate the MIC/MENU knob. (Pressing the MIC/MENU knob finalizes the setting.)
4. To change the setting values, rotate the MIC/MENU knob. (Rotating it fast makes the value change fast, and rotating it slowly makes the value change slowly.)
   Pressing the MIC/MENU knob finalizes the setting.
5. Each time the MENU switch is pressed to the CANCEL side, the screen returns to the item selection mode and page selection mode.
6. To delete the menu displayed, set the VF DISP switch to OFF.

4-1-1. TOP Menu

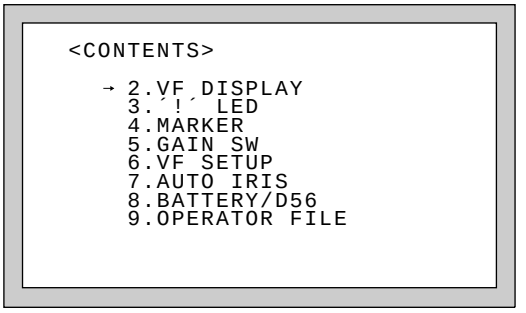
TOP MENU



Menu	Description
OPERATION	Consists of operation items such as those to be set by a camera operator according to the conditions of the subject to be shot.
PAINT	Consists of general paint operation items such as white. To display the PAINT menu, select it from the TOP menu.
MAINTENANCE	Consists of paint items used less frequently such as shading adjustment and items required for the maintenance of the camera such as system change. To display the MAINTENANCE menu, select it from the TOP menu.
FILE	Used for performing file operations such as saving the reference file. To display the FILE menu, select it from the TOP menu.
INDEX	Used for searching items to be set when their pages are unknown. To display the INDEX menu, select it from the TOP menu.
DIAG DISP	Displays the self-diagnosis and VTR status, etc. To display the DIAG DISP menu, select it from the TOP menu.

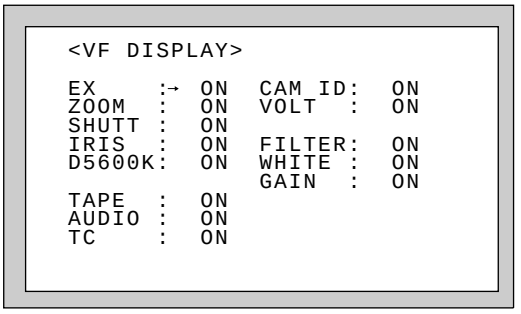
4-1-2. OPERATION Menu

CONTENTS



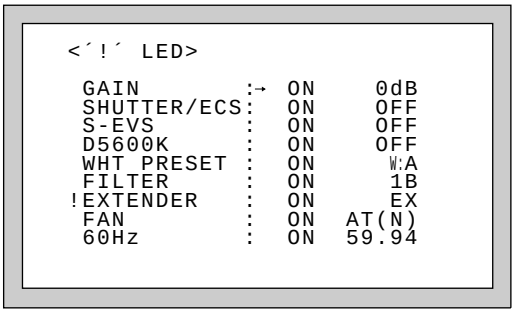
Item	Description
2. VF DISPLAY	Searching function for pages of the operation menu.
3. '!' LED	
4. MARKER	
5. GAIN SW	
6. VF SETUP	
7. AUTO IRIS	
8. BATTERY/D56	
9. OPERATOR FILE	

VF DISPLAY



Item	Setting	Description
EX	ON, OFF	Sets the extender display to ON or OFF.
ZOOM	ON, OFF	Sets the zoom position display to ON or OFF.
SHUTT	ON, OFF	Sets the shutter speed/mode/reading mode display to ON or OFF.
IRIS	ON, OFF	Sets the iris value display to ON or OFF.
D5600K	ON, OFF	Sets the D5600K mode display to ON or OFF.
TAPE	ON, OFF	Sets the tape remainder display to ON or OFF.
AUDIO	ON, OFF	Sets the audio level display to ON or OFF.
TC	ON, OFF	Sets the time code display to ON or OFF.
CAM ID	ON, OFF	Sets the camera ID display to ON or OFF.
VOLT	ON, OFF	Sets the input voltage display to ON or OFF.
FILTER	ON, OFF	Sets the optical filter disc position display to ON or OFF.
WHITE	ON, OFF	Sets the white balance memory display to ON or OFF.
GAIN	ON, OFF	Sets the gain value display to ON or OFF.

'!' LED



Item	Setting	Description
GAIN	ON, OFF	Sets the conditions for lighting the NON NORMAL (!) LED of the VF. The LED is set to light when other than GAIN 0 dB, other than SHUTTER/ECS OFF, during S-EVS ON, during D5600K ON, during WHITE PRESET, when other than FILTER 1B, during LENS EX ON, when other than fan mode AT (NORM), and during field frequency 60 Hz.
SHUTTER/ECS	ON, OFF	
S-EVS	ON, OFF	
D5600K	ON, OFF	
WHT PRESET	ON, OFF	
FILTER	ON, OFF	
EXTENDER	ON, OFF	
FAN	ON, OFF	
60Hz	ON, OFF	

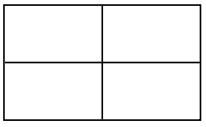
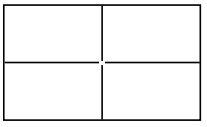
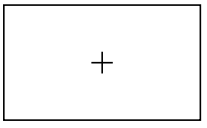
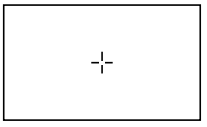
MARKER

```
<MARKER>

CENTER      :→ ON
CENTER SEL  :   1
SAFETY ZONE :  ON
SAFETY AREA :  90%
4:3 FRAME   : OFF
4:3 MOD     : OFF
4:3 MOD LVL :  50
EFFECT AREA :  ON
```

Item	Setting	Description
CENTER	ON, OFF	Sets the center marker display to ON or OFF.
CENTER SEL	1, 2, 3, 4	Sets the center marker type (*1).
SAFETY ZONE	ON, OFF	Sets the safety zone display to ON or OFF.
SAFETY AREA	80, 90, 92.5, 95 %	Sets the safety zone range.
4 : 3 FRAME	ON, OFF	Sets the 4:3 frame display to ON or OFF.
4 : 3 MOD	ON, OFF	Sets the 4:3 modulation display to ON or OFF.
4 : 3 MOD LVL	0 to 100	Sets the 4:3 modulation level.
EFFECT AREA	ON, OFF	Sets the effective pixel area display to ON or OFF.

(*1)

Setting	1	2	3	4
VF Screen				

GAIN SW

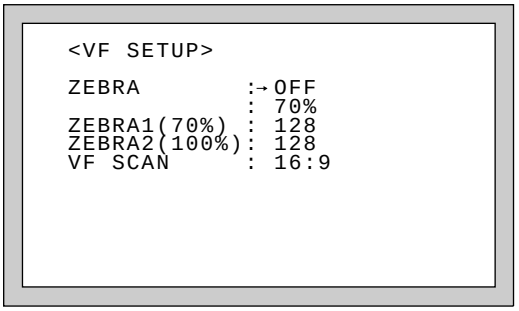
```
<GAIN SW>

LOW         :→ 0 dB
MIDDLE      :  6 dB
HIGH        : 12 dB

SELECTABLE GAIN [dB]
-3,0,3,6,12,18
```

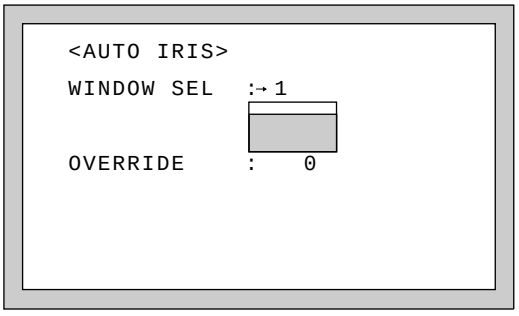
Item	Setting	Description
LOW	–3, 0, 3, 6, 12, 18dB	Sets the gain values for each of the LOW, MIDDLE, and HIGH positions of the GAIN SW.
MIDDLE	–3, 0, 3, 6, 12, 18dB	
HIGH	–3, 0, 3, 6, 12, 18dB	

VF SETUP



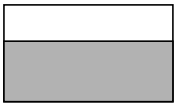
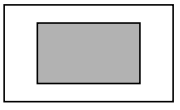
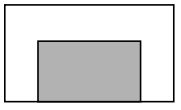
Item	Setting	Description
ZEBRA	ON, OFF	Sets the zebra display to ON or OFF.
	70 %, 100 %, 70 & 100 %	Sets the zebra type.
ZEBRA1(70%)	0 to 255	Sets the zebra 1 (70%) level.
ZEBRA2(100%)	0 to 255	Sets the zebra 2 (100%) level.
VF SCAN	16:9, 4:3	Selects the VF SCAN mode.

AUTO IRIS



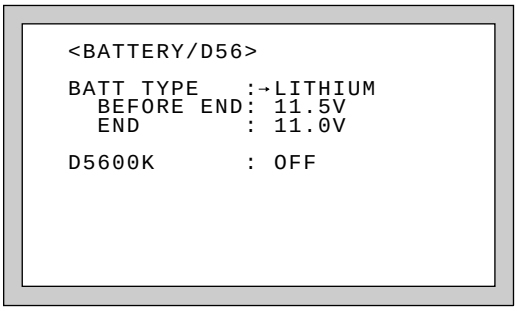
Item	Setting	Description
WINDOW SEL	1, 2, 3, 4, 5	Selects the auto iris window (*2).
OVERRIDE	–99 to 99	Sets the reference value of the auto iris level by ±1 focus. –99 (1 iris nearly closed) ↔ 99 (1 iris nearly open)

(*2)

Setting	1	2	3	4	5
VF Screen					

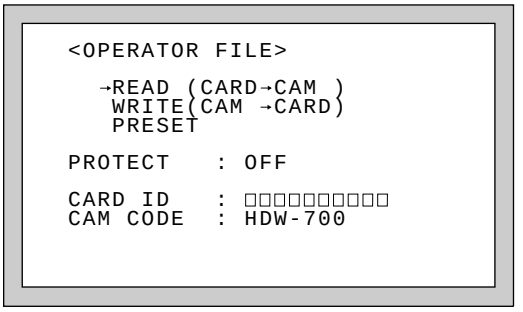
indicates the auto iris window frame.

BATTERY/D56



Item	Setting	Description
BATT TYPE	ANTON, BP-90A, LITHIUM, OTHERS	Selects the battery type.
BEFORE END	10.0 to 16.0 V	Displays the alarm voltage indicating that the battery is wearing out.
END	10.0 to 16.0 V	Displays the alarm voltage indicating that the battery has worn out.
D5600K	ON, OFF	Sets the D5600K mode to ON or OFF.

OPERATOR FILE



Item	Setting	Description
READ (CARD → CAM)		Reads from the setup card of the operator file.
WRITE (CAM → CARD)		Writes to the setup card of the operator file.
PRESET		Reads the preset value of the operation file.
PROTECT	ON, OFF	Sets the writing protection function for the setup card to ON or OFF.
CARD ID		Sets card ID of 10 or less characters consisting of alphabets, numerals, symbols and spaces.
CAM CODE		Displays the type code of the camera saved on the setup card.

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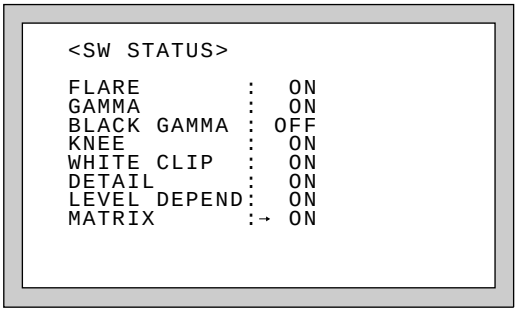
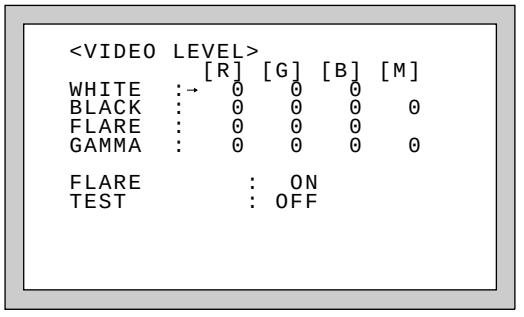
4-1-3. PAINT Menu

SW STATUS



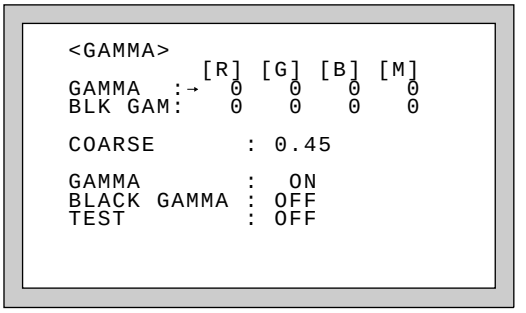
Item	Setting	Description
FLARE	ON, OFF	Sets the flare correction circuit to ON or OFF.
GAMMA	ON, OFF	Sets the gamma correction function to ON or OFF.
BLACK GAMMA	ON, OFF	Sets the black gamma correction function to ON or OFF.
KNEE	ON, OFF	Sets the knee correction circuit to ON or OFF.
WHITE CLIP	ON, OFF	Sets the white clip function to ON or OFF.
DETAIL	ON, OFF	Sets the function for attaching the detail signal for improving the resolution to ON or OFF.
LEVEL DEPEND	ON, OFF	Sets the level dependence function to ON or OFF.
MATRIX	ON, OFF	Sets the linear matrix correction function to ON or OFF.

VIDEO LEVEL



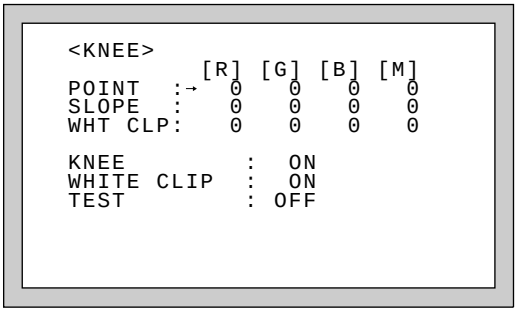
Item	Setting	Description
WHITE R/G/B	–99 to 99	Adjusts the R,G,B white level.
BLACK R/G/B/M	–99 to 99	Adjusts the black level of the R,G,B master.
FLARE R/G/B	–99 to 99	Adjusts the R,G,B flare level.
GAMMA R/G/B/M	–99 to 99	Adjusts the gamma correction curve of the R,G,B master.
FLARE	ON, OFF	Sets the flare correction circuit to ON or OFF.
TEST	OFF, VA SAW, PR SAW	Selects the test signal. VA SAW :Provides the test signal of the sawtooth wave of the VA board. PR SAW :Provides the test signal of the sawtooth wave of the DPR board. OFF :No test signal is available.

GAMMA



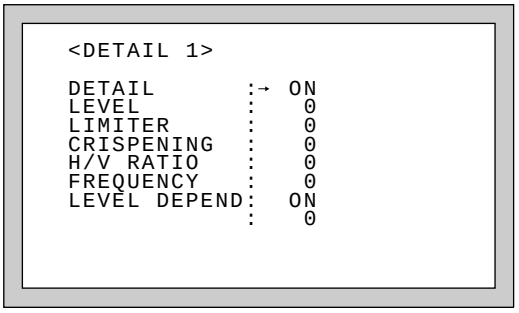
Item	Setting	Description
GAMMA R/G/B/M	–99 to 99	Adjusts the gamma correction curve of the R,G,B master.
BLK GAM R/G/B/M	–99 to 99	Adjusts the black gamma of the R,G,B master.
COARSE	0. 40, 0.45, 0.50	Sets the correction curve of the master gamma in steps.
GAMMA	ON, OFF	Sets the gamma correction function to ON or OFF.
BLACK GAMMA	ON, OFF	Sets the black gamma function to ON or OFF.
TEST	OFF, VA SAW, PR SAW	Selects the test signal. VA SAW :Provides the test signal of the sawtooth wave of the VA board. PR SAW :Provides the test signal of the sawtooth wave of the DPR board. OFF :No test signal is available.

KNEE



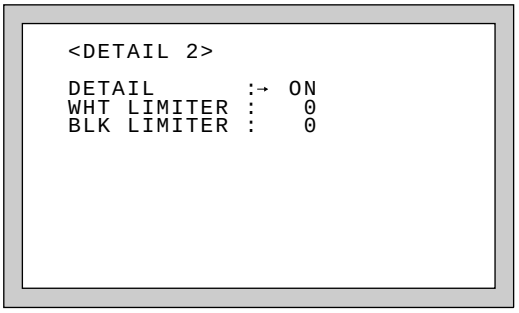
Item	Setting	Description
POINT R/G/B/M	–99 to 99	Sets the knee point level when the DCC function of the R,G,B master is OFF.
SLOPE R/G/B/M	–99 to 99	Sets the knee slope level when the DCC function of the R,G,B master is OFF.
WHT CLP R/G/B/M	–99 to 99	Sets the white clip level of the R,G,B master.
KNEE	ON, OFF	Sets the knee correction circuit to ON or OFF.
WHITE CLIP	ON, OFF	Sets the white clip function to ON or OFF.
TEST	OFF, VA SAW, PR SAW	Selects the test signal. VA SAW :Provides the test signal of the sawtooth wave of the VA board. PR SAW :Provides the test signal of the sawtooth wave of the DPR board. OFF :No test signal is available.

DETAIL 1



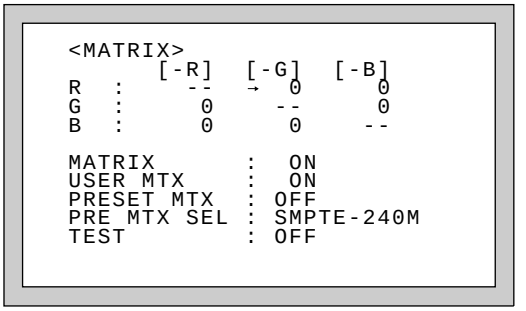
Item	Setting	Description
DETAIL	ON, OFF	Sets the function for attaching the detail signal for improving the resolution to ON or OFF.
LEVEL	–99 to 99	Sets the general level of the detail signal.
LIMITER	–99 to 99	Sets the level for clipping the excessive detail signal.
CRISPENING	–99 to 99	Sets the level for suppressing the noise components contained in the detail signal.
H/V RATIO	–99 to 99	Sets the V detail signal level.
FREQUENCY	–99 to 99	Sets the boost frequency for the H detail signal.
LEVEL DEPEND	ON, OFF	Sets the level dependence function to ON or OFF.
	–99 to 99	Sets the level at which the detail becomes invisible in dark areas.

DETAIL 2



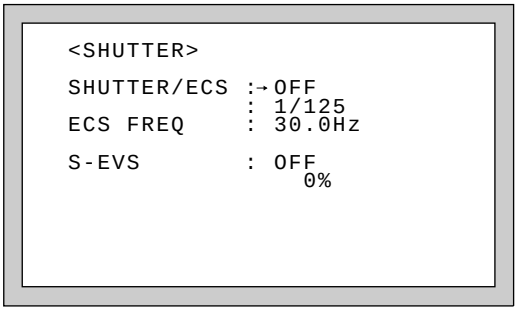
Item	Setting	Description
DETAIL	ON, OFF	Sets the function for attaching the detail signal for improving the resolution to ON or OFF.
WHT LIMITER	–99 to 99	Sets the level for clipping the excessive level in the + direction of the detail signal.
BLK LIMITER	–99 to 99	Sets the level for clipping the excessive level in the - direction of the detail signal.

MATRIX



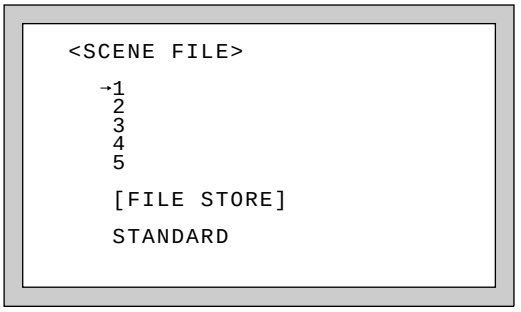
Item	Setting	Description
R-G, R-B,	–99 to 99	Sets the linear matrix coefficient of R-G, R-B, G-R, G-B, B-R,
G-R, G-B,	–99 to 99	and B-G respectively.
B-R, B-G,	–99 to 99	
MATRIX	ON, OFF	Sets the linear matrix correction function to ON or OFF.
USER MTX	ON, OFF	Sets the linear matrix correction function set by the user to ON or OFF.
PRESET MTX	ON, OFF	Sets the linear matrix correction coefficient set at factory to ON or OFF.
PRE MTX SEL	SMPTE-240M REC-709 SMPTE-WIDE NTSC EBU	Selects the linear matrix correction coefficient set at factory.
TEST	OFF, VA SAW, PR SAW	Selects the test signal. VA SAW :Provides the test signal of the sawtooth wave of the VA board. PR SAW :Provides the test signal of the sawtooth wave of the DPR board. OFF :No test signal is available.

SHUTTER



Item	Setting	Description
SHUTTER/ECS	ON, OFF	Sets the shutter/ECS to ON or OFF.
	100, 125, 250, 500, 1000, 2000, ECS	Sets the shutter mode and shutter speed.
ECS FREQ	30 to 7000 Hz	Sets the ECS frequency.
S-EVS	ON, OFF	Sets the S-EVS mode to ON or OFF.
	0 to 100 %	Sets the S-EVS.

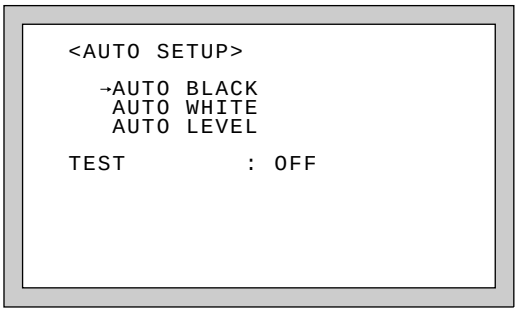
SCENE FILE



Item	Setting	Description
1		Saves and Calls the scene file.
2		**How to save**
3		1. Set "→" to FILE STORE and press the MIC/MENU knob to blink
4		[FILE STORE].
5		2. Select the file number (1-5) for saving.
FILE STORE		(If data is already saved, the data will be replaced with new one.) **How to call** Set "→" to file number to call and press the MIC/MENU knob. 1. Each time the MIC/MENU knob is pressed, the current setting and scene file setting are switched alternately. 2. When the scene file is called, the "⁎" mark will appear near the number displayed.
STANDARD		Returns the current paint amount and switch setting to the reference values.

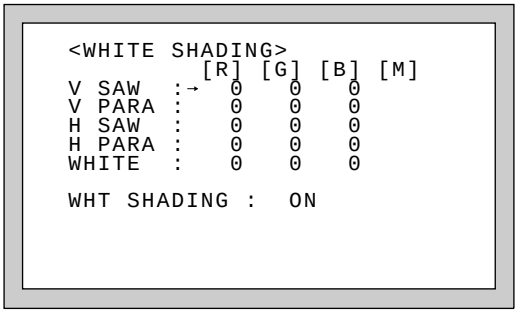
4-1-4. MAINTENANCE Menu

AUTO SETUP



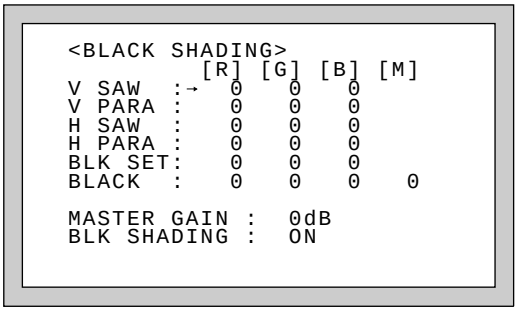
Item	Setting	Description
AUTO BLACK	Press the MIC/MENU knob to execute the operation.	Starts the automatic black balance adjustment. (Pressing the MIC/MENU knob during the execution cancels the execution.)
AUTO WHITE	Press the MIC/MENU knob to execute the operation.	Starts the automatic white balance adjustment. (Pressing the MIC/MENU knob during the execution cancels the execution.)
AUTO LEVEL	Press the MIC/MENU knob to execute the operation.	Starts the automatic level adjustment of the camera circuit. (Pressing the MIC/MENU knob during the execution cancels the execution.)
TEST	OFF, VA SAW, PR SAW	Selects the test signal. VA SAW :Provides the test signal of the sawtooth wave of the VA board. PR SAW :Provides the test signal of the sawtooth wave of the DPR board. OFF :No test signal is available.

WHITE SHADING



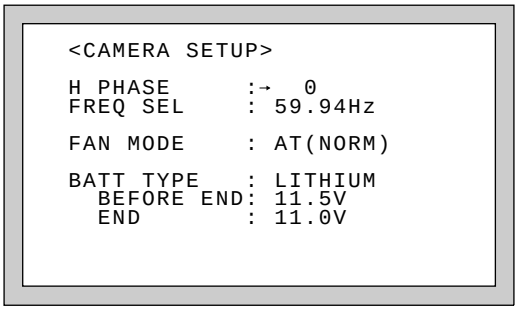
Item	Setting	Description
V SAW R/G/B	–99 to 99	Adjusts the white shading V SAW correction amount of the R,G,B master.
V PARA R/G/B	–99 to 99	Adjusts the white shading V PARA correction amount of R,G,B.
H SAW R/G/B	–99 to 99	Adjusts the white shading H SAW correction amount of R,G,B.
H PARA R/G/B	–99 to 99	Adjusts the white shading H PARA correction amount of R,G,B.
WHITE R/G/B	–99 to 99	Adjusts the white level of R,G,B.
WHT SHADING	ON, OFF	Sets the white shading correction function to ON or OFF.

BLACK SHADING



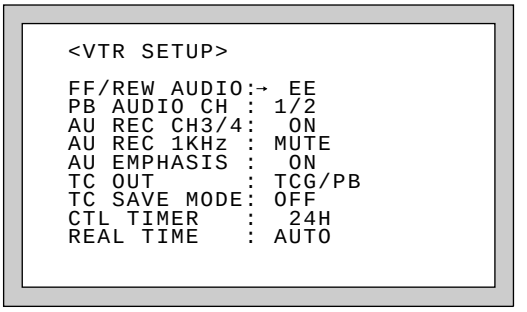
Item	Setting	Description
V SAW R/G/B	–99 to 99	Adjusts the black shading V SAW correction amount of the R,G,B master.
V PARA R/G/B	–99 to 99	Adjusts the black shading V PARA correction amount of R,G,B.
H SAW R/G/B	–99 to 99	Adjusts the black shading H SAW correction amount of R,G,B.
H PARA R/G/B	–99 to 99	Adjusts the black shading H PARA correction amount of R,G,B.
BLK SET R/G/B	–99 to 99	Adjusts the black set correction amount of R,G,B.
BLACK R/G/B/M	–99 to 99	Adjusts the black level of the R,G,B master.
MASTER GAIN	–3, 0, 3, 6, 12, 18 dB	Sets the master gain.
BLK SHADING	ON, OFF	Sets the black shading correction function to ON or OFF.

CAMERA SETUP



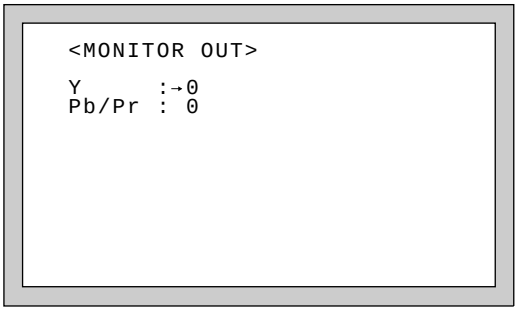
Item	Setting	Description
H PHASE	–2471 to 1022	Adjusts the H phase.
FREQ SEL	59.94, 60.00	Selects the field frequency.
FAN MODE	AT(NORM), AT(SLOW), OFF	Sets the fan mode. AT (NORM):Normal mode, AT (SLOW):Silent mode, OFF:Stoppage.
BATT TYPE	ANTON, BP-90A, LITHIUM, OTHERS	Sets the battery type.
BEFORE END	10.0 to 16.0V	Sets the alarm voltage indicating that the battery is wearing out.
END	10.0 to 16.0V	Sets the alarm voltage indicating that the battery has worn out.

VTR SETUP


<VTR SETUP>
FF/REW AUDIO:→ EE
PB AUDIO CH : 1/2
AU REC CH3/4: ON
AU REC 1KHz : MUTE
AU EMPHASIS : ON
TC OUT : TCG/PB
TC SAVE MODE: OFF
CTL TIMER : 24H
REAL TIME : AUTO

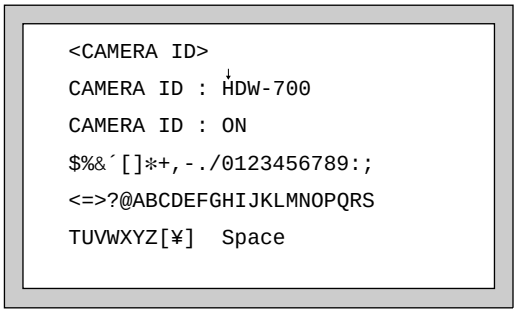
Item	Setting	Description
FF/REW AUDIO	CUE, EE	Sets the audio output during FF/REW.
PB AUDIO CH	1/2, 3/4	Sets whether to provide CH1/2 or CH3/4 to the audio output during playback.
AU REC CH 3/4	ON, OFF	Sets whether to record the CH1/2 audio signal onto CH3/4.
AU REC 1KHz	MUTE, 0 dB, –20 dB	Selects whether to record the 1 kHz test signal available from the internal SG when the color bar is selected. MUTE :Records no signal. 0 dB :Records 1 kHz, 0 dB. –20 dB :Records 1 kHz, –20 dB.
AU EMPHASIS	ON, OFF	Sets the audio emphasis to ON or OFF.
TC OUT	TCG/PB, TCG	Sets the TC output.
TC SAVE MODE	ON, OFF	Sets whether to provide the time code to TC OUT. OFF :Output provided ON :No output provided
CTL TIMER	24 H, ±10 H	Sets the CTL TIMER.
REAL TIME	AUTO, MANU	Sets the real time. MANU :Follows DF/NDF SW. AUTO :60 Hz;NDF/59.94 Hz;DF

MONITOR OUT



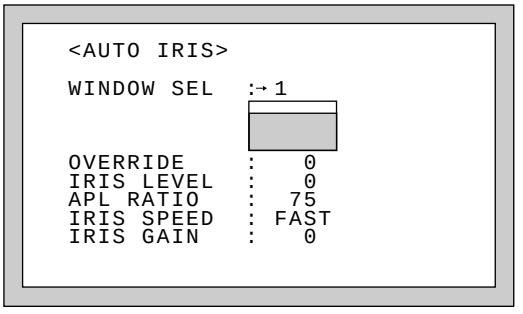
Item	Setting	Description
Y	–30 to 30	Sets the Y output level for monitor out (BNC).
Pb/Pr	–30 to 30	Sets the Pb and Pr output level for monitor out (BNC).

CAMERA ID



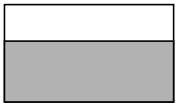
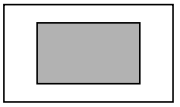
Item	Setting	Description
CAMERA ID		Sets camera ID of 10 or less characters consisting of alphabets, numerals, symbols and spaces.
CAMERA ID	ON, OFF	Sets the camera ID display to ON or OFF.

AUTO IRIS



Item	Setting	Description
WINDOW SEL	1, 2, 3, 4, 5	Selects the auto iris window (*2).
OVERRIDE	–99 to 99	Sets the reference value of the auto iris level by ±1 focus. –99 (1 iris nearly closed) ↔ 99 (1 iris nearly open)
IRIS LEVEL	–99 to 99	Sets the auto-iris level.
APL RATIO	–99 to 99	Sets the method of detecting the light amount of the auto iris. –99 (Peak light detection) ↔ 99 (Average value detection of whole screen)
IRIS SPEED	FAST, MIDDLE, SLOW	Sets the auto iris operation speeds.
IRIS GAIN	–99 to 99	Sets the iris gain.

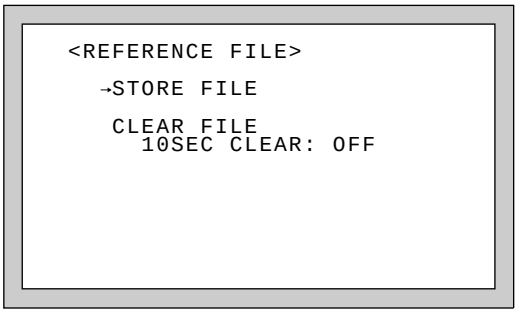
(*2)

Setting	1	2	3	4	5
VF Screen					

indicates the auto iris window frame.

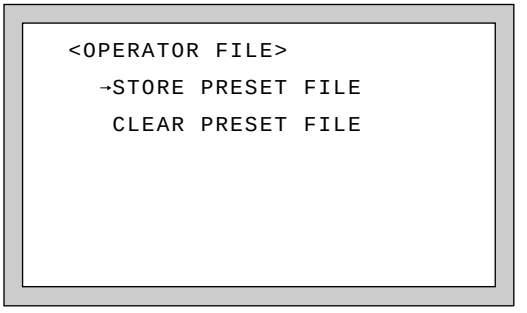
4-1-5. FILE Menu

REFERENCE FILE



Item	Setting	Description
STORE FILE	Press the MIC/MENU knob to execute the operation.	Registers the adjustment values of each item as the reference value. (Pressing the MIC/MENU knob makes FILE STORE OK? blink. Repress the knob to execute the operation. Press the CANCEL switch to cancel it.)
CLEAR FILE	Press the MIC/MENU knob to execute the operation.	Deletes the adjustment values of each item as the reference value. (Pressing the MIC/MENU knob makes FILE CLEAR OK? blink. Repress the knob to execute the operation. Press the CANCEL switch to cancel it.)
10SEC CLEAR	ON, OFF	10SEC CLEAR is provided for clearing the stored reference levels of items specified. This item sets the function of 10SEC CLEAR to ON or OFF. With this set to ON, set the MIC/MENU knob to items to be cleared on other pages and press the knob for 10 sec. “REF CLEAR” display shows up.

OPERATOR FILE



Item	Setting	Description
STORE PRESET FILE	Press the MIC/MENU knob to execute the operation.	Registers as the user preset value of the operator file. (Pressing the MIC/MENU knob makes FILE STORE OK? blink. Repress the knob to execute the operation. Press the CANCEL switch to cancel it.)
CLEAR PRESET FILE	Press the MIC/MENU knob to execute the operation.	Returns the user preset value of the operator file to the factory setting. (Pressing the MIC/MENU knob makes FILE STORE OK? blink. Repress the knob to execute the operation. Press the CANCEL switch to cancel it.)

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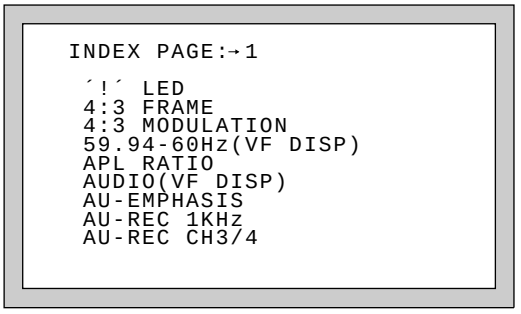
4-1-6. INDEX Menu

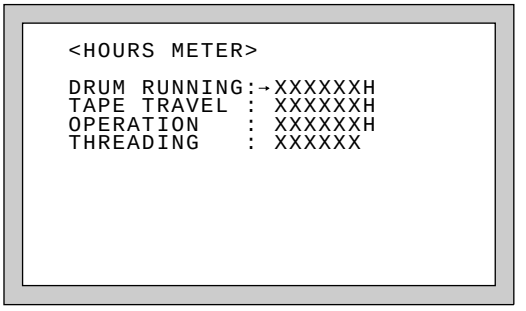
INDEX PAGE



Item	Description
INDEX PAGE	Searches for each item. (Rotate the MIC/MENU knob and select INDEX PAGE. Then set the "→" mark to the item required, and press the MIC/MENU knob to execute the operation.)

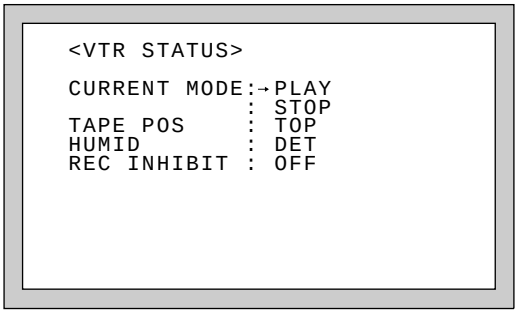
4-1-7. DIAG DISP Menu

HOURS METER



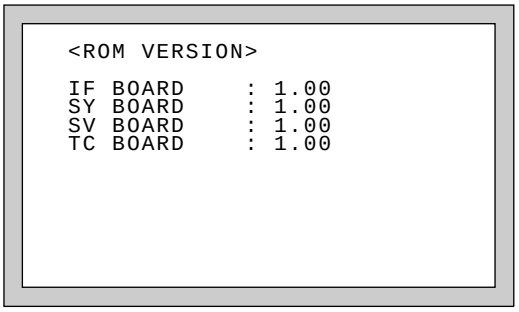
Item	Setting	Description
DRUM RUNNING	XXXXXXH	Displays the drum running time.
TAPE TRAVEL	XXXXXXH	Displays the tape running time.
OPERATION	XXXXXXH	Displays the operating time.
THREADING	XXXXXX	Displays the number of threading.

VTR STATUS



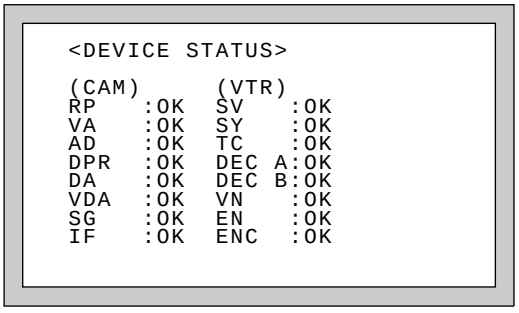
Item	Setting	Description
CURRENT MODE	UNTHREAD, STOP, PLAY, FF, REW, THREAD, REC, R. PAUSE, R. PREVIEW	Displays the current and last VTR mode.
TAPE POS	TOP, - - -, END	Displays the tape position.
HUMID	DET, - - -	Displays the HUMID sensor status.
REC INHIBIT	ON, OFF	Displays the REC INHIBIT function status.

ROM VERSION



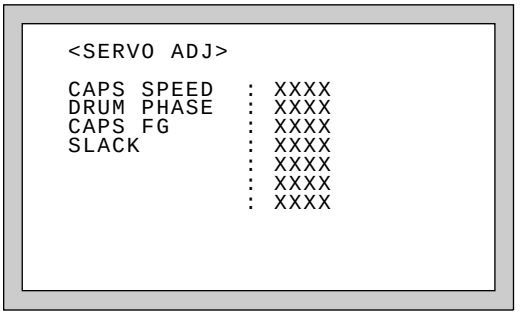
Item	Setting	Description
IF BOARD	X.XX	Displays the ROM version of the IF board.
SY BOARD	X.XX	Displays the ROM version of the SY board.
SV BOARD	X.XX	Displays the ROM version of the SV board.
TC BOARD	X.XX	Displays the ROM version of the TC board.

DEVICE STATUS



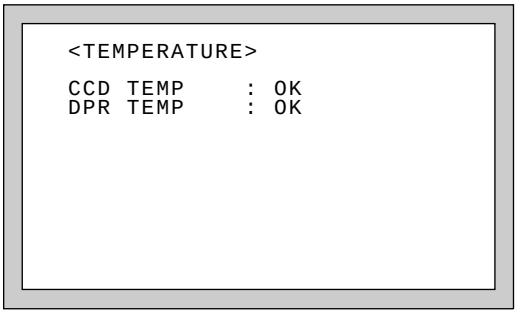
Item	Setting	Description	
(CAM)	RP	OK, NG	Displays the self-diagnosis status of the RP board.
	VA	OK, NG	Displays the self-diagnosis status of the VA board.
	AD	OK, NG	Displays the self-diagnosis status of the AD board.
	DPR	OK, NG	Displays the self-diagnosis status of the DPR board.
	DA	OK, NG	Displays the self-diagnosis status of the DA board.
	VDA	OK, NG	Displays the self-diagnosis status of the VDA board.
	SG	OK, NG	Displays the self-diagnosis status of the SG board.
	IF	OK, NG	Displays the self-diagnosis status of the IF board.
(VTR)	SV	OK, NG	Displays the self-diagnosis status of the SV board.
	SY	OK, NG	Displays the self-diagnosis status of the SY board.
	TC	OK, NG	Displays the self-diagnosis status of the TC board.
	DEC A	OK, NG	Displays the self-diagnosis status of the DEC A board.
	DEC B	OK, NG	Displays the self-diagnosis status of the DEC B board.
	VN	OK, NG	Displays the self-diagnosis status of the VN board.
	EN	OK, NG	Displays the self-diagnosis status of the EN board.
	ENC	OK, NG	Displays the self-diagnosis status of the ENC board.

SERVO ADJ



Item	Setting	Description
CAPS SPEED	XXXX	Displays the capstan free speed adjustment data.
DRUM PHASE	XXXX	Displays the drum PG phase adjustment data.
CAPS FG	XXXX	Displays the capstan FG offset adjustment data.
SLACK	XXXX XXXX XXXX XXXX	Displays the slack trouble code and status code.

TEMPERATURE



Item	Setting	Description
CCD TEMP	OK, NG	Displays the self-diagnosis status of the temperature around the CCD.
DPR TEMP	OK, NG	Displays the self-diagnosis status of the temperature of the DPR board.

Section 5
File System

The HDW-700A is equipped with various file systems for managing data.

5-1. File Structure

The following five types of files are available.

1. **Operator File**
   Stores the items displayed on the viewfinder and switch settings for camera operator. This file can be stored in the setup card, but video data (paint data) cannot be stored.
2. **Preset Operator File**
   Stores the standard state of operator file items.
   This file can be stored in the camera. The custom preset data can also be set in this file, but video data (paint data) cannot be stored.
3. **Reference File**
   Stores the custom paint data adjusted by the video engineer. This file can be stored in the camera and setup card.
4. **Lens File**
   Used for compensation of the deviation which generate by switching the lens extender from OFF to ON and for compensation of the difference in the characteristics between lenses. This file can be stored in the camera.
5. **ND Offset**
   Used for compensation of the deviation in the white balance of the ND filter. This file can be stored in the camera.
6. **Scene File**
   Stores the temporary video setting data according to the scene. This file can be stored in the camera.

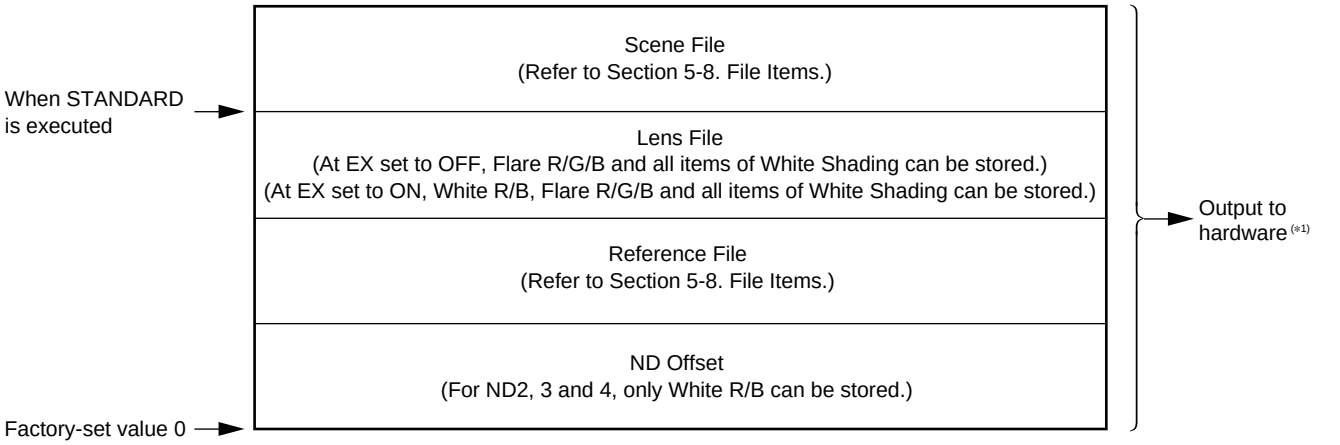

When STANDARD is executed
Scene File
(Refer to Section 5-8. File Items.)
Lens File
(At EX set to OFF, Flare R/G/B and all items of White Shading can be stored.)
(At EX set to ON, White R/B, Flare R/G/B and all items of White Shading can be stored.)
Reference File
(Refer to Section 5-8. File Items.)
ND Offset
(For ND2, 3 and 4, only White R/B can be stored.)
Factory-set value 0
Output to hardware (*1)

Fig. 5-1. Structure of Paint Related Files

(∗1): The additional data of each file is sent to each circuit on the unit.

5-2. Operator File

Data is stored at the setting menu. The items which can be stored are indicated with ◎ in “Operator” of “File Store” column in Section 5-8. File Items. (Except the items of D5600K and Auto Iris Override.)

Storing method (Step 1 of Fig. 5-2.)

Set the setting menus as follows, and store the current status in the setup card.

OPERATION → OPERATOR FILE → WRITE (CAM → CARD)

Reading method (Step 2 of Fig. 5-2.)

Set the setting menus as follows.

OPERATION → OPERATOR FILE → READ (CARD → CAM)

Note

Operator files stored in the setup card will not be read when the power is just turned ON. This file will only be read when READ is executed at the setting menu.

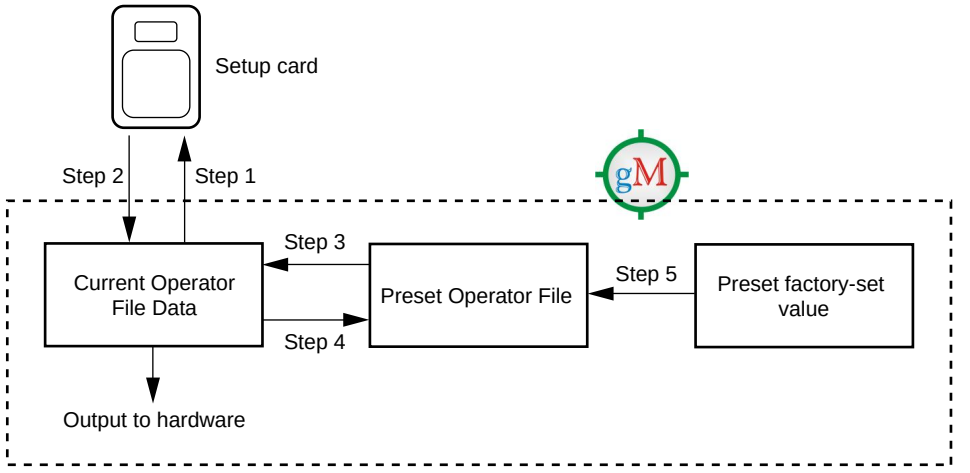


Fig. 5-2. Operating Procedure for Operator Files

5-3. Preset Operator File

The operator file items can be reset to the preset values. There are two ways of calling-calling from the setting menus or reading at power ON. The items which can be stored on file are the same as Operator File.

Calling from the Setting Menus (Step 3 of Fig. 5-2.)

Set the setting menus as follows.
OPERATION → OPERATOR FILE → PRESET

Calling at POWER ON (Step 3 of Fig. 5-2.)

Set the WHITE BAL switch to “PRST”, and while pushing the AUTO W/B BAL switch to the WHT side, set the POWER switch to ON.

Storing the Preset Values (Step 4 of Fig. 5-2.)

The items of the preset values can be changed using the setting menus.
Set the setting menus as follows.
FILE → OPERATOR FILE → STORE PRESET FILE
Then, current status can be stored in the camera as Preset Operator File.

Initializing the Preset Values (Step 5 of Fig. 5-2.)

Execute “CLEAR PRESET FILE” to initialize the changed preset items to the factory-set data.

5-4. Registering Reference Files

This file can be stored and read using the setting menu or the Remote Control Panel of MSU-700, etc. Only one file can be stored, and will be stored in the camera and setup card.
The item which can be stored is indicated with ◎ or ○ in “Reference” of “File Store” column in Section 5-8. File Items. ◎ means that the values stored will continue to be displayed even after they have been stored. ○ indicates items which will be displayed as 0. For items indicated with set values, these values will be stored as the fixed values. For items indicated with -, their values cannot be changed by storing or reading.
For reference files, differential data taking the factory-set as 0 will be stored. Therefore, initializing the reference file to 0, sets the same status as that at factory-set.(*1) Using the setting menu, all items or specified items can be initialized to 0.
Reference files can be copied between cameras using the setup card.

(*1) : If lens files or ND offsets have been created, those need to be initialized as well.

Storing Using the Setting Menu (Step 1 of Fig.5-3.)

Set the setting menus as follows.
FILE → REFERENCE FILE → STORE FILE
The data will be stored in the camera and the numerical data will be displayed as 0. (Excluding some items. Refer to Section 5-8. File Items.) If PROTECT of the setup card is set to OFF, the data will also be stored in the setup card at the same time.

Storing by MSU-700 (Step 1 of Fig.5-3.)

Set the MODE switch to FILE and select REFERENCE → REF STORE. The data will be stored in the camera and the numerical data will be displayed as 0. (Excluding some items. Refer to Section 5-8. File Items.) If PROTECT of the setup card is set to OFF, the data will also be stored in the setup card at the same time.

Calling from Setting Menus (Step 2 of Fig. 5-3), (Refer to Fig. 5-1.)

Set the setting menus as follows.
PAINT → SCENE FILE → STANDARD
The temporary paint amount and scene file amount will be cleared and the reference file items will be reset to the state stored in.

Reading from Remote Control Panel of MSU-700, Etc. (Step 2 of Fig. 5-3.)

Press the “STANDARD” switch. Reset the reference file to the state stored in.

Reading the Reference File Data from the Setup Card (Steps 2 and 3 of Fig. 5-3.)

During the file storing, read the reference files which have been stored in the setup card at the same time. The reference files in the camera can also be changed.
Set the setting menus as follows.
FILE → CARD READ → READ (CAM → CARD) REFERENCE FILE
After the data of the setup card is read to the camera, STANDARD will be executed automatically.

Note

When the power is just turned on, the reference files stored in the setup card will not be read. This file will only be read when READ is executed at the setting menu.

Initializing All File Items Using Setting Menus (Step 4 of Fig. 5-3.)

Set the setting menus as follows.
FILE → REFERENCE FILE → CLEAR FILE

Initializing Only Specified Items Using Setting Menus (Step 4 of Fig. 5-3.)

References files for specified items can be initialized using setting menus.

(1) Set the initialization function to ON.
(2) Set the setting menus as follows.
FILE → REFERENCE FILE → 10 SEC CLEAR → ON
(3) Move to the page containing the items to be cleared from the reference files in the PAINT or MAINTENANCE menu.
(4) Adjust "→" to the item to be erased using the MIC/MENU knob, and keep pressing this knob about 10 seconds at "?" state until "REF CLEAR " is displayed. About 3 seconds later, "DATA CLEAR" will be displayed at the bottom most line. The "REF CLEAR" is displayed about 10 seconds later, and the data will be initialized to 0.

Notes

- Only items which can be numerically set can be initialized. ON/OFF settings and selected items cannot be erased.
- The 10 SEC CLEAR function must always be set to OFF when the power is turned ON.

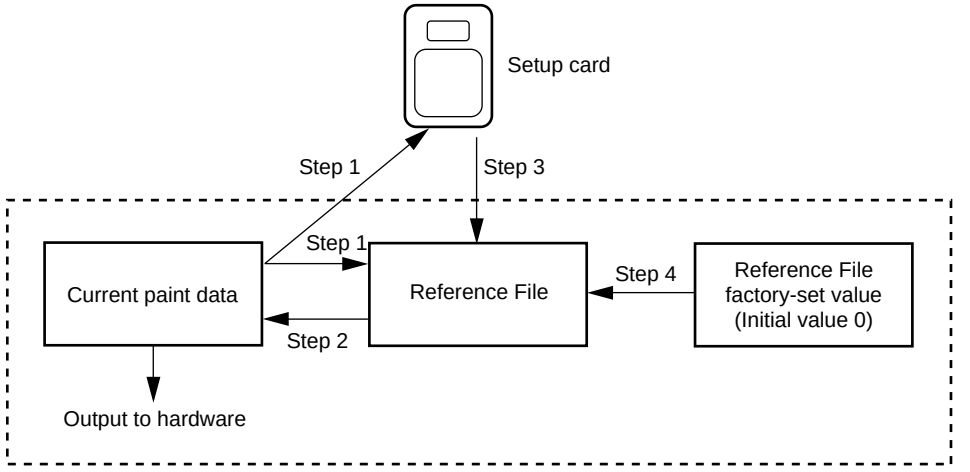


Fig. 5-3. Operating Procedure for Reference Files

5-5. Registering the Lens File

The white shading which occurs when the extender is turned on, flare balance, white balance, F value of the open edge of the lens, name, etc. can be stored. Five files can be stored. When using several lenses, store the adjustment data on lens replacement in the file to eliminate the need for adjustments each time the lens is replaced. This data will be stored in the camera.
The data which can be stored are the items indicated with ◎ or ○ in “Lens” of “File Store” column. ◎ means that the values stored will continue to be displayed even after they have been stored. ○ indicate items which will be displayed as 0. EX ON means data which are stored when the extender is ON. EX OFF means data which are stored when the extender is OFF. For items indicated with -, their values cannot be changed by storing or reading.
For lens files, differential data taking the setting at factory-set as 0 will be stored. Therefore, it is necessary to perform adjustments using lens normally used before creating the lens file, and to create a reference file.

Adjusting Using Normally Used Lens

(1) Mount the lens. Set the setting menus as follows.
FILE → LENS FILE → FILE → 1
(2 Set the lens file name and F value of the open edge of the lens.
(3) With the extender set to OFF, adjust white shading. Shoot the all white pattern, set the iris F4 and zoom position to the center of the ring, and perform the adjustment around 560 mV of 80% video level. Also adjust the flare balance and white balance shooting the gray scale.
(4) Store the data in the reference file.
(5) To store the white balance when the extender is OFF, store the data in lens file.
(6) Set the extender to ON, adjust the white shading shooting the all white pattern, and adjust the flare balance and white balance shooting the gray scale.

Note

As the lens file is rewritten after storing, the output of the white balance may change in some cases, but this symptom is not an abnormal condition.

(7) Store the data in the lens file. Set the setting menus as follows.
FILE → LENS FILE → STORE FILE
(8) If the lens center deviates when the extender is switched to ON/OFF, store the center marker under the extender is ON state. Adjust CENTER H POS and CENTER V POS at the LENS FILE page, and execute CENTER POS STORE.

Note

The center marker will not be stored when the lens file is stored.

http://getMANUAL.com

Adjusting Using the Second Lens

(1) Mount the lens. Set the setting menus as follows.
FILE → LENS FILE → FILE, and select the number between “2” to “5”.
(2) Set the lens file name and F value of the open edge of the lens.
(3) Set the extender to OFF. Adjust the white shading shooting the all white pattern. Also adjust the flare balance and white balance shooting the gray scale. Store the data in the lens file.
(4) Set the extender to ON. Adjust the white shading shooting the all white pattern, and adjust the flare balance and white balance shooting the gray scale.
(5) If the lens center deviates when the extender is switched to ON/OFF, store the center marker under the extender is ON state.

Calling the Lens File

Select the lens file. Set the setting menus as follows.
OPERATION → BATTERY/D56 → LENS FILE

Initializing the Lens File

Set the setting menus as follows.
LENS FILE → CLEAR CURRENT FILE
All data of the lens file current selected will be initialized to 0. The lens name is “NO OFFSET”.

5-6. Registering the Scene File

The scene file is used for storing temporary video adjustment values according to the scene. 5 files can be stored and the data will be stored in the camera. The data can be stored using a setting menu or the Remote Control Panel of MSU-700, etc.
Items which can be stored are indicated with ◎ in “SCENE” of “File Store” column in Section 5-8. File Items. For items indicated with -, their values cannot be changed by storing or calling.

Note

Scene files are files for storing the differences from the reference file. Therefore when the reference file is changed, outputs by the scene file can also be changed.

Storing Using Setting Menus

(1) Set the setting menus as follows.
PAINT → SCENE FILE → STANDARD
(2) Change the scene file item to the desired value.
(3) Set the setting menus as follows.
PAINT → SCENE FILE → FILE STORE
Select the scene file number to be stored.

Calling Using Setting Menus and Clearing the Call

Select the scene file number called at the “SCENE FILE” page of the PAINT menu. Files currently being called with be displayed with “* ” at the side of the number. Selecting the number again clears the call and resets the state before calling.

Storing with the Remote Control Panel

(1) Change the scene file item to the desired value.
(2) Press “STORE” of the scene file, and press the STORE number.

Calling with the Remote Control Panel and Clearing the Call

Press the No. switch of the “SCENE FILE” to call. The switch also lights up. Press again to cancels the call and turns off the switch.

5-7. Adjusting the ND Offset

The white balance may be slightly deviated in the ND filters. In such cases, adjust the offset. Taking the ND1 white balance as the reference, the ND offset stores the deviation of the white balance of ND:2, 3, and 4.

Adjusting the ND Offset

(1) Connect the waveform monitor to MONITOR OUT connector of this unit.
(2) Select ND4 filter, and shoot the gray scale. Check that the illuminant condition if the video level is within 560 mV thru. 630 mV. Then note the video level at this time.

Note

Do not adjust the ND offset if the video level is less than 560 mV.

(3) Select ND:1, and set the iris so that the video level is the same level as the noted video level.
(4) Execute the auto white balance.
(5) Set ND:2, and set the iris to meet the noted video level of Step 2.
(6) Execute the auto white balance.
(7) Set ND:3, and set the iris to meet the noted video level of Step 2.
(8) Execute the auto white balance.
(9) Set ND:4, and set the iris to meet the noted video level of Step 2.
(10) Execute the auto white balance.
(11) Store the ND offset.
Set the setting menus as follows.
FILE → REFERENCE FILE → STORE ND OFFSET page of the setting menu.

Notes

- Set the noted video level precisely, otherwise the deviation of the white balance of the ND filter may change in some cases.
- If the level cannot be adjusted properly using the iris, adjust the level using the shutter/ECS or gain-up.

Calling the ND Offset

When the ND filter is changed, the ND offset will be called automatically.

Initializing the ND Offset

Set the compensation value to 0 by storing the same data for N1 to N4.
(1) Set the setting menus as follows.
PAINT → VIDEO LEVEL → TEST → VA SAW
(2) Execute the auto white balance with ND:1.
Execute the auto white balance with ND:2.
Execute the auto white balance with ND:3.
Execute the auto white balance with ND:4.
(3) Store the ND offset.

5-8. File Items (After IF Board ROM Version 2.00 and Higher)

Type	Item	File Store					Standard	When Power is turned ON	At Factory-set
		Operator	Refe -rence	Scene	Lens				
					EX OFF	EX ON			
Select	Marker center type	◎	–	–	–	–	–	–	1
	Marker safety zone type	◎	–	–	–	–	–	–	90 %
	Gain SW (L/M/H) setting	◎	–	–	–	–	–	–	0/6/12 dB
	VF scan size	◎	–	–	–	–	–	–	16:9
	Shutter speed	–	◎	◎	–	–	REF	–	1/125
	Master gain	–	◎	◎	–	–	REF	– (*3)	0 dB
	ND filter	–	–	◎ (*1)	–	–	–	–	1 (CLEAR)
	CC filter	–	–	◎ (*1)	–	–	–	–	B (3200K)
	Step gamma	–	◎	◎	–	–	REF	–	0.45
	Auto iris window pattern	◎ (*10)	◎	–	–	–	REF	–	WINDOW SEL Setting 1 (*14)
	Auto iris speed	◎ (*10)	◎ (*8)	–	–	–	REF	–	FAST
	White memory (*13)	–	–	–	–	–	–	– (*3)	B
	Preset matrix	–	◎	◎	–	–	REF	–	SMPTE-240M
	Fan mode	–	–	–	–	–	–	AT (*2) (NORM)	AT (NORM)
	60 Hz/59.94 Hz	–	◎	–	–	–	REF	–	59.94 Hz
	Battery type	◎ (*11)	–	–	–	–	–	–	LITHIUM
	Battery NEAR END voltage	–	–	–	–	–	–	–	11.5 V (LITHIUM)
	Battery END voltage	–	–	–	–	–	–	–	11.0 V (LITHIUM)
	VTR FF/REW AUDIO	–	–	–	–	–	–	–	EE
	VTR PB AUDIO CH	–	–	–	–	–	–	–	1/2
	VTR AU REC 1KHz	–	–	–	–	–	–	–	MUTE
	VTR TC OUT	–	–	–	–	–	–	–	TCG/PB
	VTR CTL TIMER	–	–	–	–	–	–	–	24H
	VTR REAL TIME	–	–	–	–	–	–	–	AUTO
	H phase (When GEN LOCK)	–	–	–	–	–	–	–	0
	Camera ID	–	–	–	–	–	–	–	HDW-700A
	Lens open F value (F STOP)	–	–	–	–	–	–	–	0
	Monitor out level (Y)	–	–	–	–	–	–	–	0
	Monitor out level (Pb/Pr)	–	–	–	–	–	–	–	0

Type	Item	File Store					Standard	When Power is turned ON	At Factory-set
		Operator	Refe -rence	Scene	Lens				
					EX OFF	EX ON			
ON/OFF	VF DISP related (Extender, zoom, shutter, iris, D5600K, tape remainder, audio input level, TC, camera ID, power supply voltage, filter, white memory, master gain)	◎	–	–	–	–	–	–	ON
	'!' LED display on/off setting (master gain, shutter, S-EVS, D5600K, white memory preset, filter, extender, fan mode, 60 Hz)	◎	–	–	–	–	–	–	ON
	Marker (Whole)	◎ (※4)	–	–	–	–	–	–	ON
	Marker center	◎	–	–	–	–	–	–	ON
	Marker safety zone	◎	–	–	–	–	–	–	ON
	Marker 4:3/VISTA frame	◎	–	–	–	–	–	–	ON
	Marker effective area	◎	–	–	–	–	–	–	ON
	4:3/VISTA mask (modulation)	◎	–	–	–	–	–	–	ON
	Zebra	–	–	–	–	–	–	– (※4)	OFF
	Zebra 1 (70%) ON	◎	–	–	–	–	–	–	ON
	Zebra 2 (100%) ON	◎	–	–	–	–	–	–	OFF
	Auto knee (DCC)	–	◎	◎	–	–	REF	– (※3)	ON
	Knee	–	ON	◎	–	–	ON	–	ON
	Gamma	–	ON	◎	–	–	ON	–	ON
	Flare	–	ON	◎	–	–	ON	–	ON
	S-EVS	–	◎	◎	–	–	REF	–	OFF
	ECS	–	◎	◎	–	–	REF	– (※3)	OFF
	Shutter	–	◎	◎	–	–	REF	– (※3)	OFF
	Detail	–	◎	◎	–	–	REF	–	ON
	Detail level depend	–	◎	◎	–	–	REF	–	ON
	Skin detail	–	◎	◎	–	–	REF	–	ON
	Skin detail GATE	–	–	–	–	–	OFF	OFF	OFF
	Matrix	–	◎	◎	–	–	REF	–	ON
	User matrix	–	◎	◎	–	–	REF	–	ON
	Preset matrix	–	◎	◎	–	–	REF	–	OFF
	V modulation shading	–	ON	◎	–	–	ON	–	ON
	Black gamma	–	◎	◎	–	–	REF	–	OFF
	White clip	–	ON	◎	–	–	ON	–	ON

To next page

Type	Item	File Store					Standard	When Power is turned ON	At Factory-set
		Operator	Refe -rence	Scene	Lens				
					EX OFF	EX ON			
ON/OFF	Auto iris	–	ON	–	–	–	ON	ON	ON
	Iris close	–	OFF	–	–	–	OFF	OFF	OFF
	Test 1 (VA SAW)	–	–	–	–	–	–	–	OFF
	Test 2 (PR SAW)	–	–	–	–	–	–	–	OFF
	Color bar	–	–	–	–	–	–	–	OFF
	D5600K	OFF (※12)	OFF	◎	–	–	OFF	–	OFF
	White shading	–	ON	–	–	–	ON	ON	ON
	Black shading	–	ON	–	–	–	ON	ON	ON
	VTR AU REC CH3/4	–	–	–	–	–	–	–	ON
	VTR AU EMPHASIS	–	–	–	–	–	–	–	ON
	VTR TC SAVE MODE	–	–	–	–	–	–	–	OFF

Type	Item	File Store					Standard	When Power is turned ON	At Factory-set
		Operator	Refe -rence	Scene	Lens				
					EX OFF	EX ON			
Control									
(Analog)	Zebra 70% level	◎	–	–	–	–	–	–	128
(Analog)	Zebra 100% level	◎	–	–	–	–	–	–	128
(Analog)	4:3/VISTA mask level	◎	–	–	–	–	–	–	50
(Analog)	White R/B	–	○	◎ (+REF)	–	○	REF +LENS +ND (0)	–	0
(Analog)	White G	–	○	◎ (+REF)	–	–	REF (0)	–	0
(Digital)	Black master (Pedestal)	–	○ (※5)	◎	–	–	REF (0)	–	0
(Digital)	Black R/G/B	–	○	◎ (+REF)	–	–	REF (0)	–	0
(Digital)	Gamma Master	–	○ (※5)	◎	–	–	REF (0)	–	0
(Digital)	Gamma R/G/B	–	○	◎ (+REF)	–	–	REF (0)	–	0
(Analog)	Flare R/G/B	–	○	◎ (+REF)	○	○	REF +LENS (0)	–	0
(Digital)	Detail level	–	◎	◎	–	–	REF	–	0
(Digital)	Detail limit	–	○ (※6)	◎	–	–	REF (0)	–	0
(Digital)	Detail white limit	–	◎	◎					
(Digital)	Detail black limit	–	◎	◎	–	–	REF	–	0
(Digital)	Detail crispening	–	◎	◎	–	–	REF	–	0
(Digital)	Detail HV ratio (V detail)	–	◎	◎	–	–	REF	–	0
(Digital)	Detail level depend	–	◎	◎	–	–	REF	–	0
(Digital)	Detail H frequency	–	◎	◎	–	–	REF	–	0
(Digital)	Skin detail level	–	◎	◎	–	–	REF	–	0
(Digital)	Skin detail PHASE	–	◎	◎	–	–	REF	–	0
(Digital)	Skin detail WIDTH	–	◎	◎	–	–	REF	–	0
(Digital)	Skin detail SATURATION	–	◎	◎	–	–	REF	–	0
(Digital)	White clip master	–	○ (※5)	◎	–	–	REF (0)	–	0
(Digital)	White clip R/G/B	–	○	◎ (+REF)	–	–	REF (0)	–	0
(Digital)	Knee point master (When DCC is off)	–	◎ (※5)	◎	–	–	REF	–	0
(Digital)	Knee point R/G/B (When DCC is off)	–	◎	◎	–	–	REF	–	–33 (98 %)
(Digital)	Knee slope master (When DCC is off)	–	◎ (※5)	◎	–	–	REF	–	0
(Digital)	Knee slope R/G/B (When DCC is off)	–	◎	◎	–	–	REF	–	–36 (0.320)
(Digital)	User matrix G-R/B-R/R-G	–	◎	◎	–	–	REF	–	0
(Digital)	User matrix B-G/R-B/G-B	–	◎	◎	–	–	REF	–	0

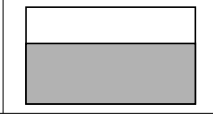
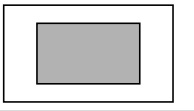
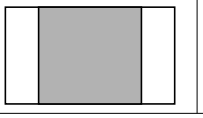
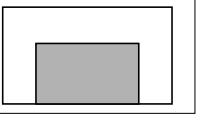
To next page

Type	Item	File Store					Standard	When Power is turned ON	At Factory-set
		Operator	Refe -rence	Scene	Lens				
					EX OFF	EX ON			
Control									
(Digital)	Black gamma Master	–	○ (*5)	◎	–	–	REF (0)	–	0
(Digital)	Black gamma R/G/B	–	○	◎ (+REF)	–	–	REF (0)	–	0
(Digital)	Auto iris level	◎ (*10)	◎ (*8)	–	–	–	REF	–	0
(Digital)	Auto iris APL ratio	◎ (*10)	◎ (*8)	–	–	–	REF	–	0
(Digital)	Auto Iris gain	◎ (*10)	◎ (*8)	–	–	–	REF	–	0
(Analog)	Auto iris override	0 (*9)	0	–	–	–	0	0	0
(Digital)	ECS frequency	–	◎	◎	–	–	REF	–	30 Hz
(Digital)	EVS data (%)	–	◎	◎	–	–	REF	–	0 %
(Analog)	Black set R/G/B	–	– (*7)	–	–	–	0	–	0
(Analog)	Black shading H SAW R/G/B	–	○	–	–	–	REF (0)	–	0
(Analog)	Black shading H PARA R/G/B	–	○	–	–	–	REF (0)	–	0
(Analog)	Black shading V SAW R/G/B	–	○	–	–	–	REF (0)	–	0
(Analog)	Black shading V PARA R/G/B	–	○	–	–	–	REF (0)	–	0
(Analog)	White shading H SAW R/G/B	–	○	–	○	○	REF+LENS (0)	–	0
(Analog)	White shading H PARA R/G/B	–	○	–	○	○	REF+LENS (0)	–	0
(Analog)	White shading V SAW R/G/B	–	○	–	○	○	REF+LENS (0)	–	0
(Analog)	White shading V PARA R/G/B	–	○	–	○	○	REF+LENS (0)	–	0
(Digital)	Center marker position	–	–	–	◎	◎	–	–	0

"○" means items which will be displayed as 0.
"◎" means that the values stored will be continue to be displayed even after they have been stored.
The "◎ (+REF)" in the scene file column means the value added from the reference file is stored.
"−" indicates items which do not change.
"REF" indicates the value stored in the reference file is returned. "REF + LENS" means that the LENS file value is also added. "ND" means that the ND OFFSET is also added.
"ON" "OFF" means that the value indicated will always be set.
The standard "(0)" means that the display becomes 0 during standard calling.

(∗1): When the electromotive filter option is used
(∗2): The fan mode becomes AT (NORM) only when the power is turned off by setting the previous fan mode to OFF.
(∗3): Follows the position of the front/side switch on the camera.
(∗4): ON/OFF follows the position of the switch setting on VF.
(∗5): Master items are separated into R, G, and B, stored and become 0 after storing.
(∗6): Detail limits are separated into the detail white limit and black limit, stored, and become 0 after storing.
(∗7): The black set paint is cleared to 0 by storing.
(∗8): A value is set for each iris window pattern. When the window is switch, the values are switched.
(∗9): Cleared to 0 when the preset of the operator file is called.
(∗10): The value stored in the reference file is reset when the preset of the operator file is called.
(∗11): LITHIUM is reset when the preset of the operator file is called.
(∗12): OFF is set back when the preset of the operator file is called.
(∗13): When the white memory is PRESET, PRSET is cleared when the remote control is connected and the previous state (A or B) is set.
Since white memories A and B are used for every four CC filters, altogether 8 types of white memories are available.

(∗14):

Setting	1	2	3	4	5
VF Screen					

indicates the auto iris window frame.

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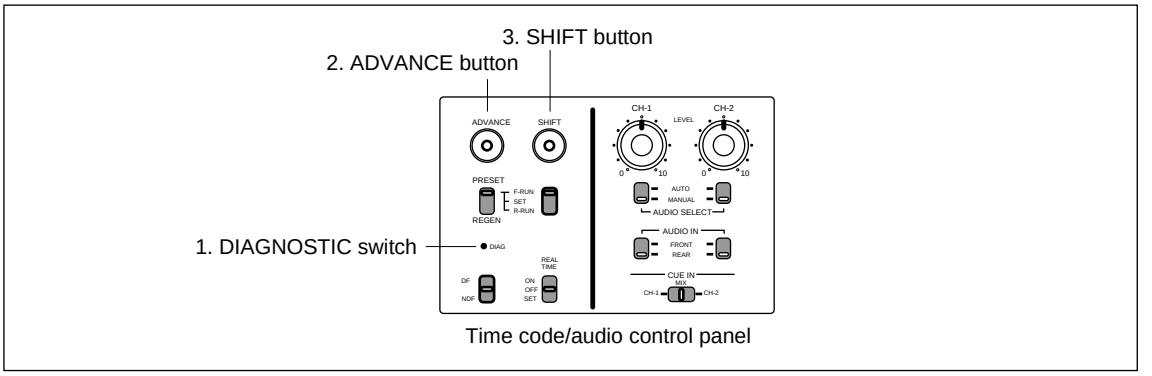
Section 6
Diagnostic Mode

The DIAGNOSTIC mode is used for checking the VTR.

Note

Use this mode with the tape stopped.

Switches



Time code/audio control panel

1. DIAGNOSTIC switch

Press to enter and exit the DIAGNOSTIC mode.

2. ADVANCE button

Shifts the left digit of menu one step.

3. SHIFT button

Shifts the right digit of menu one step.

OPERATION

1. Press the DIAGNOSTIC switch on the side panel with a stick tip, etc. to enter the DIAGNOSTIC mode.
2. To shift the menu, press the ADVANCE or SHIFT button.
   ADVANCE button : Shifts the left digit one step at a time.
   SHIFT button : Shifts the right digit one step at a time.
3. To exit the DIAGNOSTIC mode, press the DIAGNOSTIC switch again.

MODE LCD SCREEN	DESCRIPTION
HOURS METER	The following are displayed.
1-1 XXXH	1. Drum running meter (Cumulative)
1-2 XXXH	2. Tape running meter (Cumulative)
1-3 XXXH	3. Operation meter (Cumulative)
1-4 XXX	4. Threading counter (Cumulative)
1-5 XXXH	5. Drum running meter (Resetable)
1-6 XXXH	6. Tape running meter (Resetable)
1-7 XXXH	7. Operation meter (Resetable)
1-8 XXX	8. Threading counter (Resetable) For maintenance purpose only. (For details, refer to Section 7-3-1. Hours Meter.)
BATTERY VOLTAGE BEFORE END 2-1 XX.XV END 2-2 XX.XV	Displays the “battery-before-end voltage” and “battery-end voltage”.

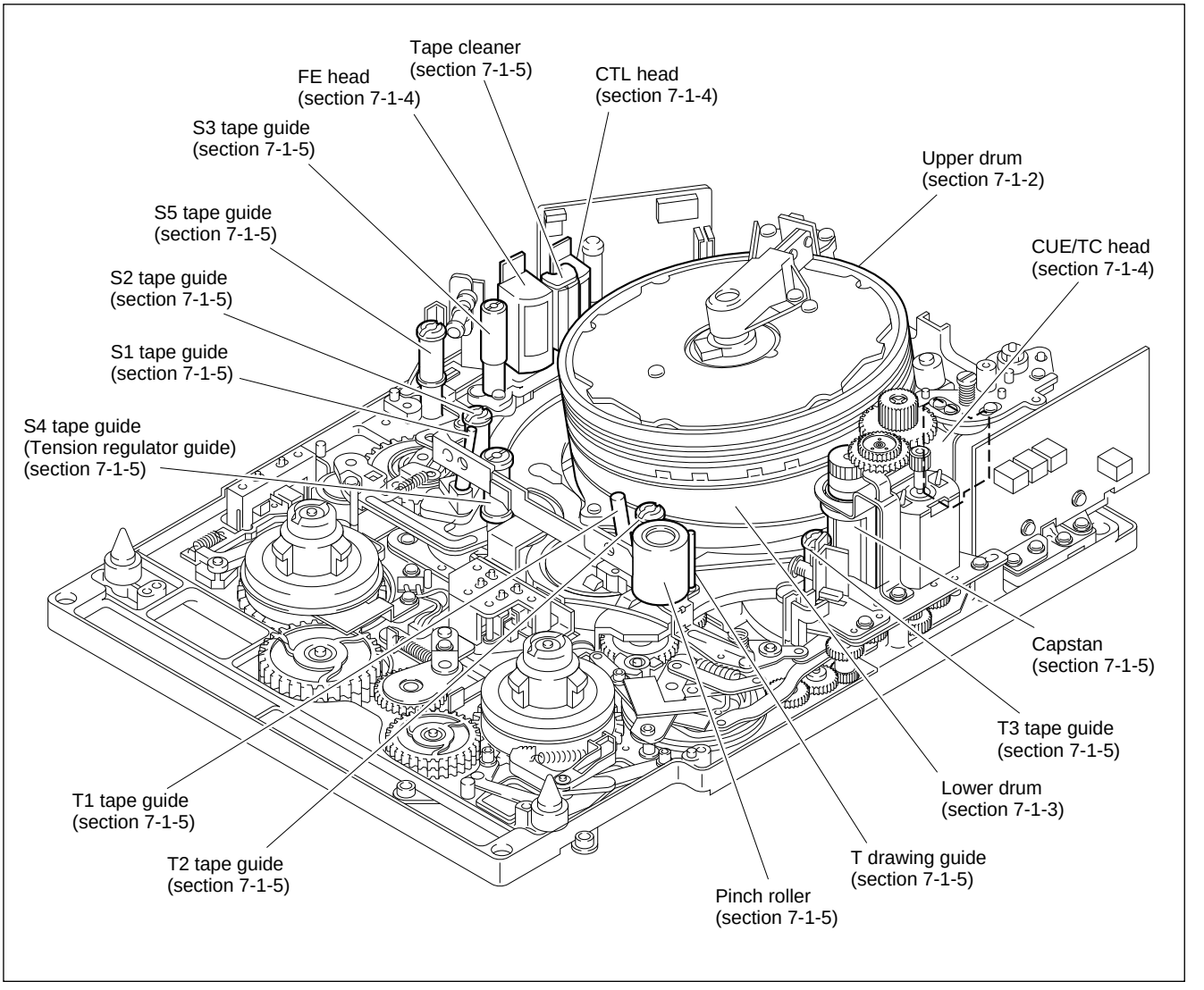
Section 7
Periodic Maintenance and Inspection

7-1. Cleaning

Make it a rule to clean the unit periodically to assure that the unit functions and performs at its best for the longest-possible product-life period.

7-1-1. General Information on Cleaning

1. Index



2. Notes

- Be sure to turn the power off before cleaning.
- The mechanical deck blocks consist of precision parts, and are fabricated and adjusted precisely. Do not damage the parts nor apply excessive force during cleaning.
- Do not touch the greased areas during cleaning. If grease adheres to a cleaning cloth, replace the cleaning cloth with a new one. If a cleaning cloth smeared with grease is used, the grease may adhere to the areas which should not be greased.
- Do not insert a cassette tape before the cleaning fluid evaporates completely.

3. Preparations

Remove the front lid and outside panel. (Refer to section 2-3.)

4. Cleaning Cassette Tape

Make sure to use the specified cleaning cassette tape.
Specified cleaning cassette tape : BCT-HD12CL
For details, refer to Operation Manual.

7-1-2. Cleaning of Tape Running Surface of Upper Drum and Video Heads

Note

The video head and upper drum may damage easily. Be careful not to damage them when cleaning.

Tools

- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

Note

Never use a cotton swab.

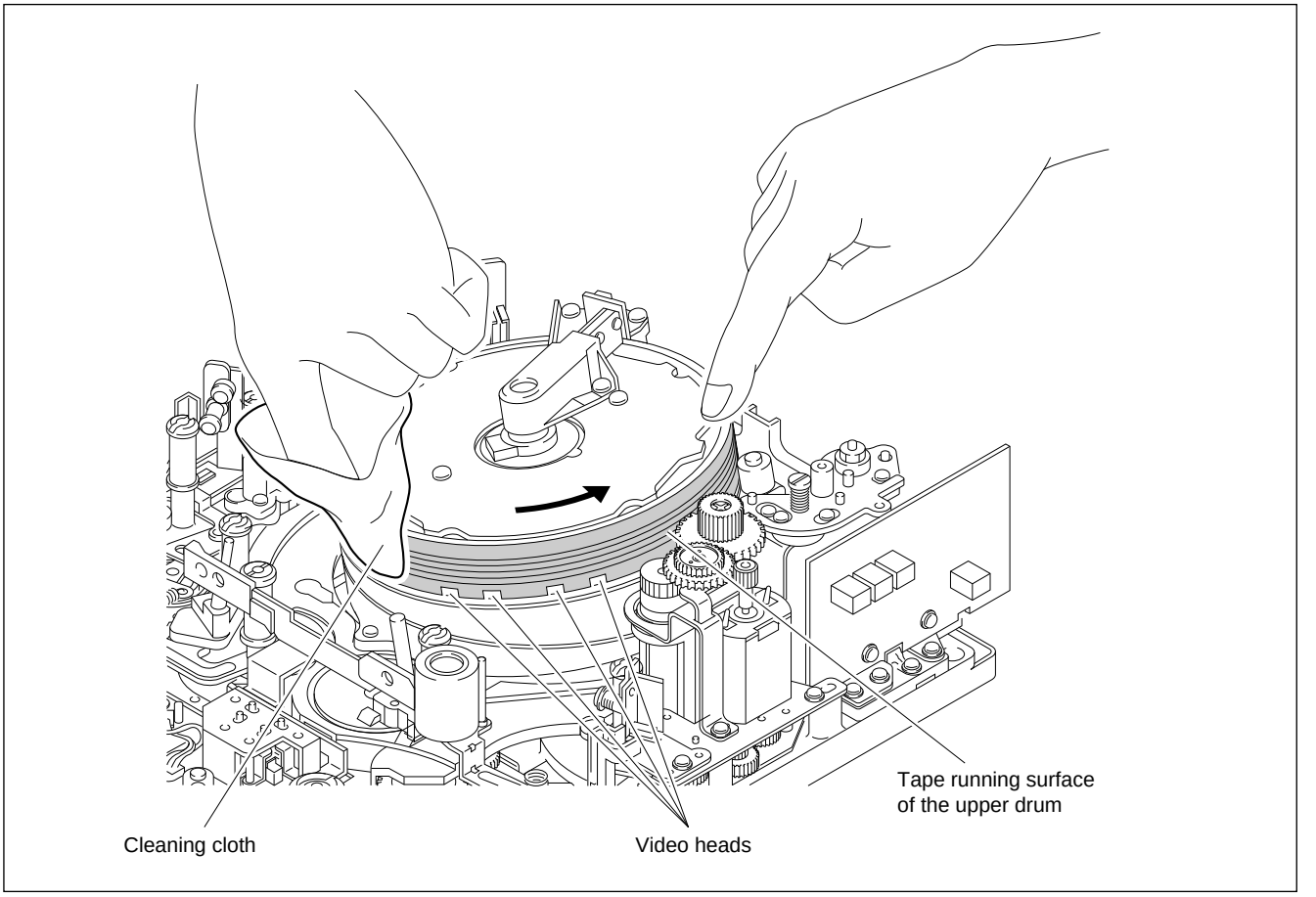
Procedure

1. Apply a cleaning cloth moistened with cleaning fluid to the video heads, and rotate the upper drum slowly counterclockwise by fingers.
2. Apply a cleaning cloth moistened with cleaning fluid to the tape running surface of the upper drum (shaded portion) as shown, and clean it along the outer surface.

   Notes

   Be sure to rotate the upper drum counterclockwise. Be sure to clean the surface along the outer circumference. (Do not clean the surface in the vertical direction. This may damage the heads.)

3. After cleaning, wipe off moisture using a dry cleaning cloth.



7-1-3. Cleaning of Tape Running Surface of Lower Drum and Lead Surface

Note

Be careful not to damage the lower drum (especially the lead surface) when cleaning.
Also clean the upper edges of the lower drum carefully because they are near the video heads.

Tools

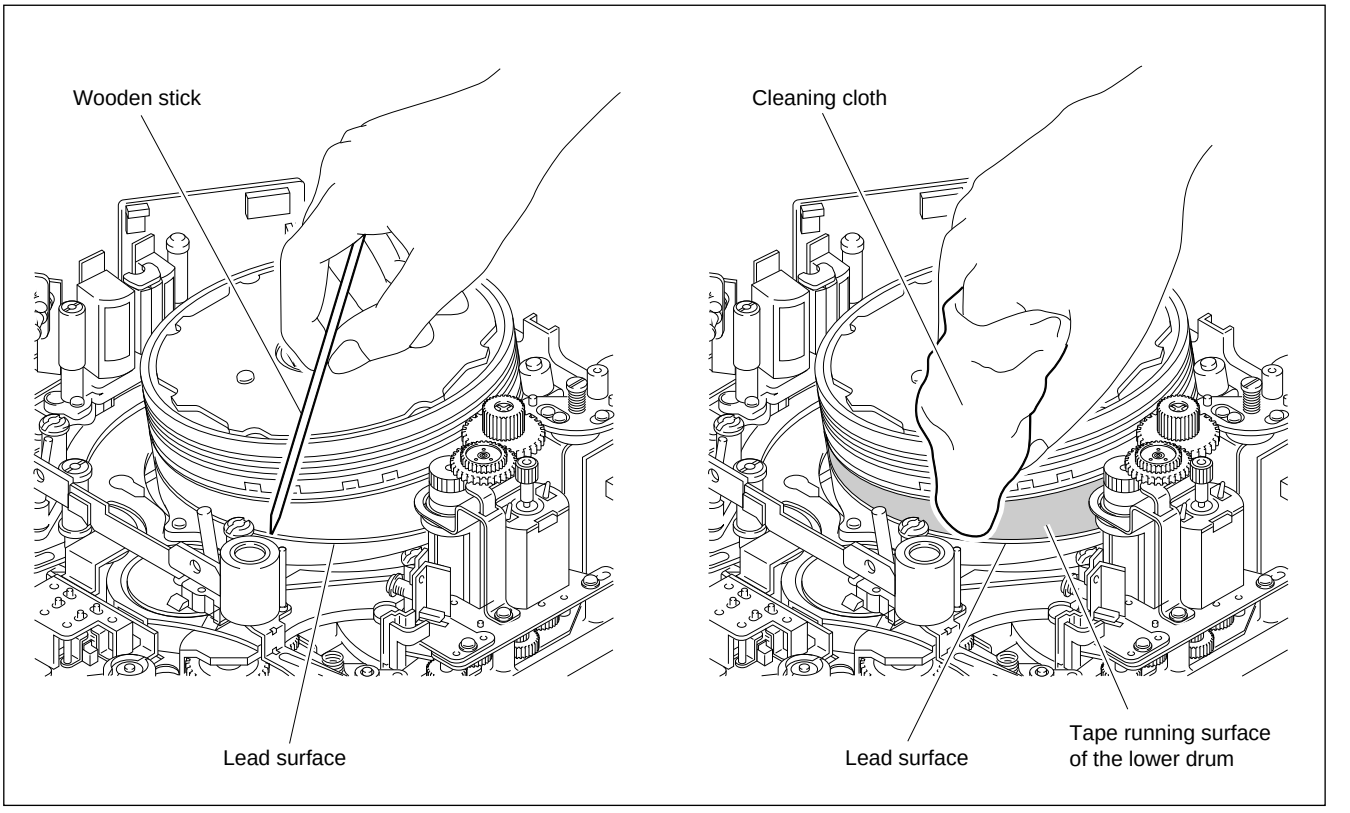
- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01
- Wooden stick or equivalent (Metal pick cannot be used)

Procedure

1. Move a wooden stick (or equivalent) along the drum lead surface and remove magnetic particles as shown in the figure.

   Notes

   (1) Do not use a metal stick in place of a wooden stick because it may damage the tape running surface.
   (2) Remove magnetic particles completely from the drum lead surface. Otherwise, they may affect tracking.
2. Clean the tape running surface of the lower drum and lead surface (shaded portion) using a cleaning cloth moistened with cleaning fluid.
3. After cleaning, be sure to wipe off moisture using a dry cleaning cloth.



7-1-4. Cleaning of Stationary Heads

Note

Be careful not to damage the surfaces of the stationary heads when cleaning.

Tools

- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

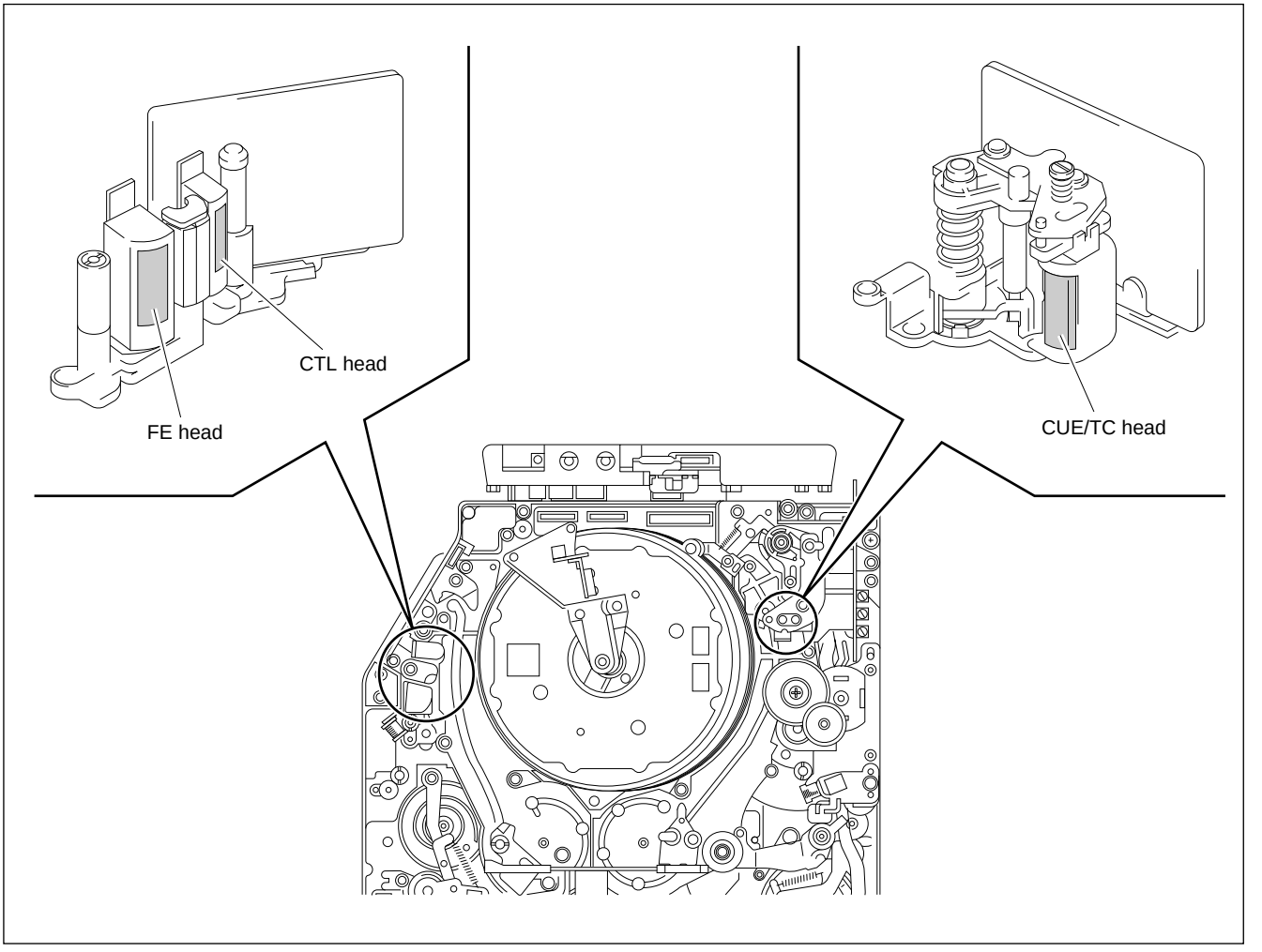
Procedure

1. Clean the tape running surfaces (shaded portion) of the FE, CTL, CUE/TC heads by wiping them in the vertical direction using a cleaning cloth moistened with cleaning fluid.

   Note

   Remove magnetic particles completely from the head gaps of the FE, CTL and CUE/TC heads. Otherwise, they may cause recording and playback errors.

2. After cleaning, be sure to wipe off moisture using a dry cleaning cloth.



7-1-5. Cleaning of Tape Path System and Tape Cleaner

CAUTION

The edge of the tape cleaner is very sharp and may hurt your fingers. Avoid touching the edge when cleaning.

Tools

- Cleaning cloth : 3-184-527-01
- Cleaning fluid : 9-919-573-01

Procedure

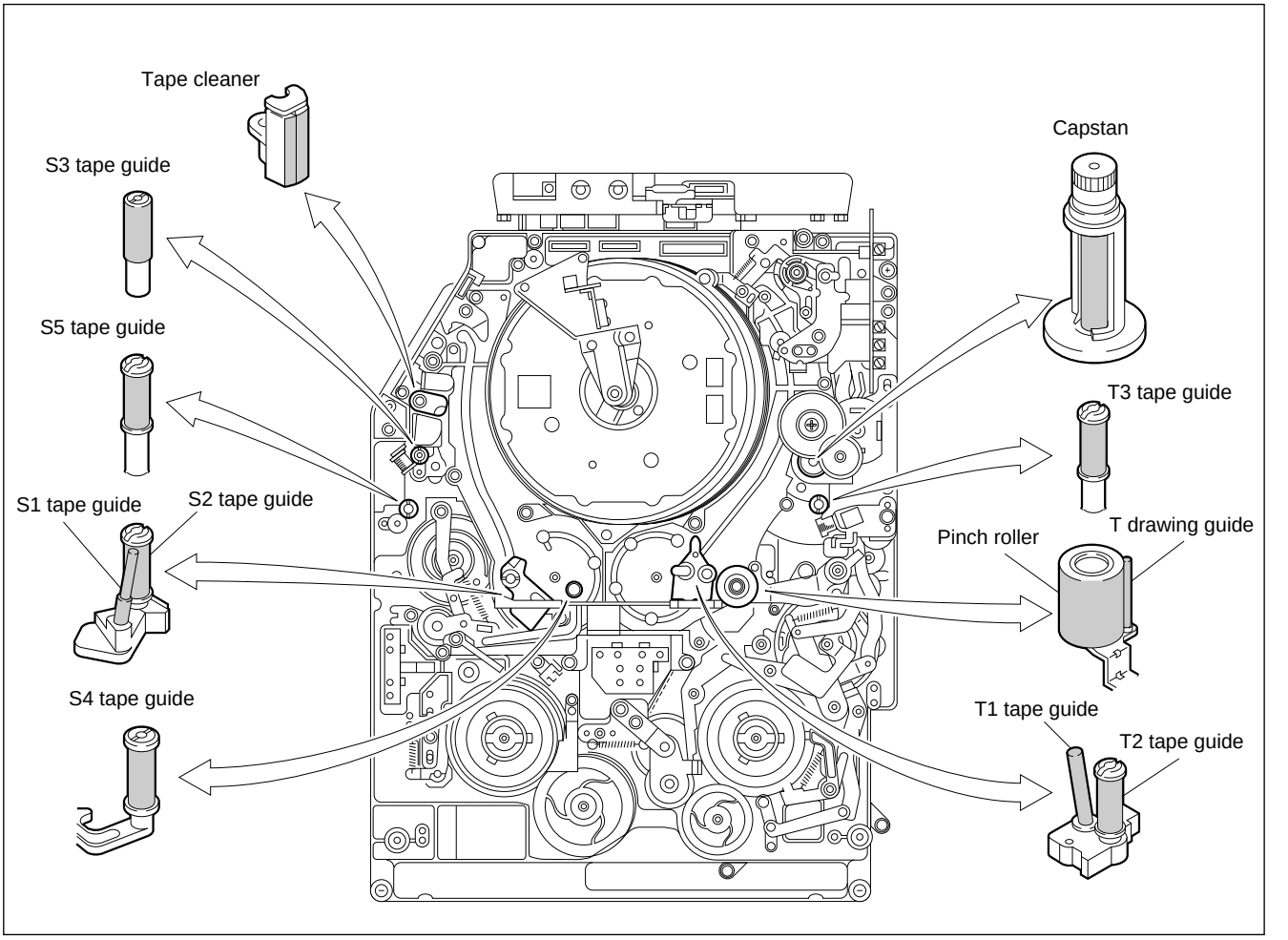
1. Clean the tape running surfaces (shaded portions) of the following guides and the edge of the tape cleaner using a cleaning cloth moistened with cleaning fluid.

   S1 to S5 guides, T1 to T3 guides, T drawer guide, capstan, pinch roller

   CAUTION

   Never touch the edge of the tape cleaner.

2. Remove the magnetic particles left in the gaps of the tape cleaner with paper, etc.
3. After cleaning, be sure to wipe off moisture using a dry cleaning cloth.



7-1-6. Cleaning of Filter

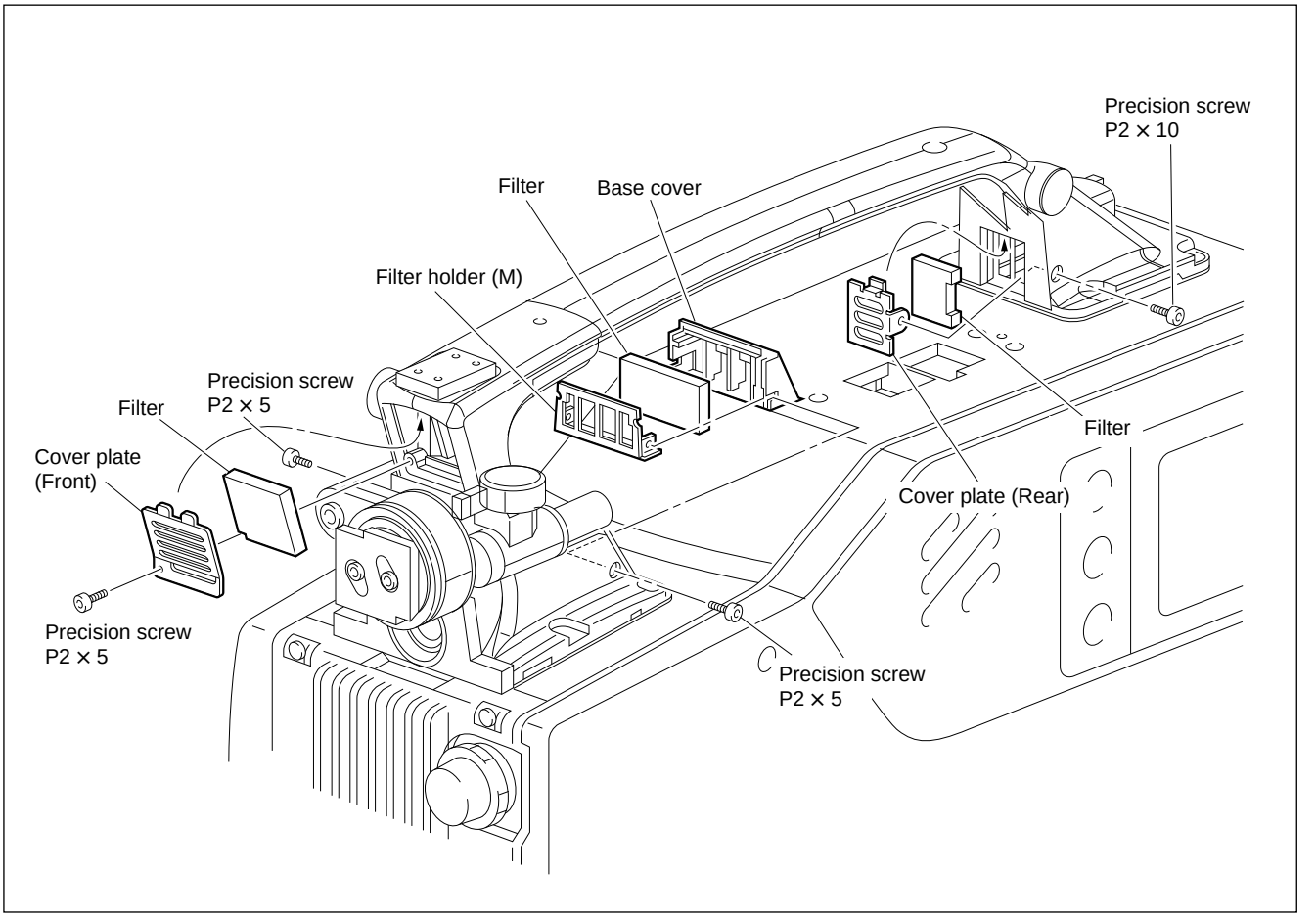
Clean the dust-filter periodically once every 2 or 3 months. Otherwise, clogging of dusts, etc. may cause the temperature inside the unit to rise and result in malfunctions.

Removal

1. Remove the four precision screws (P2 × 5, P2 × 10) and remove covers.
2. Remove the three filters.

Cleaning

Wash the filters by hands with neutral detergent and leave them in the shade to dry.



7-2. Maintenance After Use in Special Environments

It is recommended that the following be checked after use in special environments such as seaside, dusty places, hot springs.

1. Remove the sand and dusts from the unit thoroughly.
2. Clean off the salt from seawater and sulfur from hot springs.
3. Clean the video head, upper and lower drums, and stationary heads.
4. Clean the tape running surface (tape guide, capstan shaft, pinch roller, etc.).
5. Clean the connector pin of the connector panel.
6. Perform general operations (recording, playback, etc.) and verify that no abnormal noises are produced from the unit and that the unit operates normally.

If operations are found abnormal, etc., contact Sony service personnel.

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7-3. Periodic Inspections

Make it a rule to carry out periodic inspections to assure that the unit functions and performs at its best for the longest-possible product-life period.

7-3-1. Hours Meter

The unit can display a hours meter on its LCD display at the side panel. The hours meter is resetable. It is recommended that periodic inspection be carried out using this hours meter.

1. Displaying

(1) Press the “DIAGNOSTIC” switch on the side panel using a stick tip to enter the DIAGNOSTIC mode.
(2) To shift the menu, press the ADVANCE or SHIFT button on the side panel.
ADVANCE button : Shifts the left digit one step at a time.
SHIFT button : Shifts the right digit one step at a time.
(3) To end the DIAGNOSTIC mode, press the “DIAGNOSTIC” switch again.

2. Display Screen

MODE / LCD SCREEN	DESCRIPTION
HOURS METER	The following are displayed.
I-1 XXXH	1. Drum running meter (Cumulative)
I-2 XXXH	2. Tape running meter (Cumulative)
I-3 XXXH	3. Operation meter (Cumulative)
I-4 XXX	4. Threading counter (Cumulative)
I-5 XXXH	5. Drum running meter (Resetable)
I-6 XXXH	6. Tape running meter (Resetable)
I-7 XXXH	7. Operation meter (Resetable)
I-8 XXX	8. Threading counter (Resetable)

7-3-2. Periodic Inspection List

Note

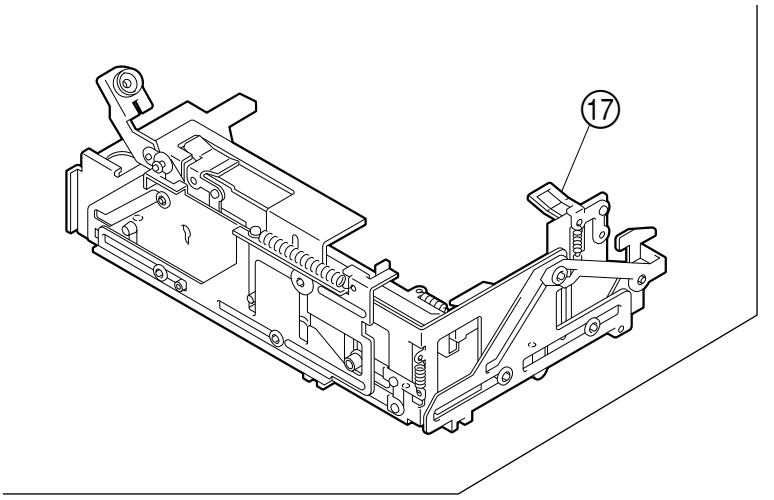
The parts with the marking "↓" (① to ③) are included in the part listed immediately below (④).

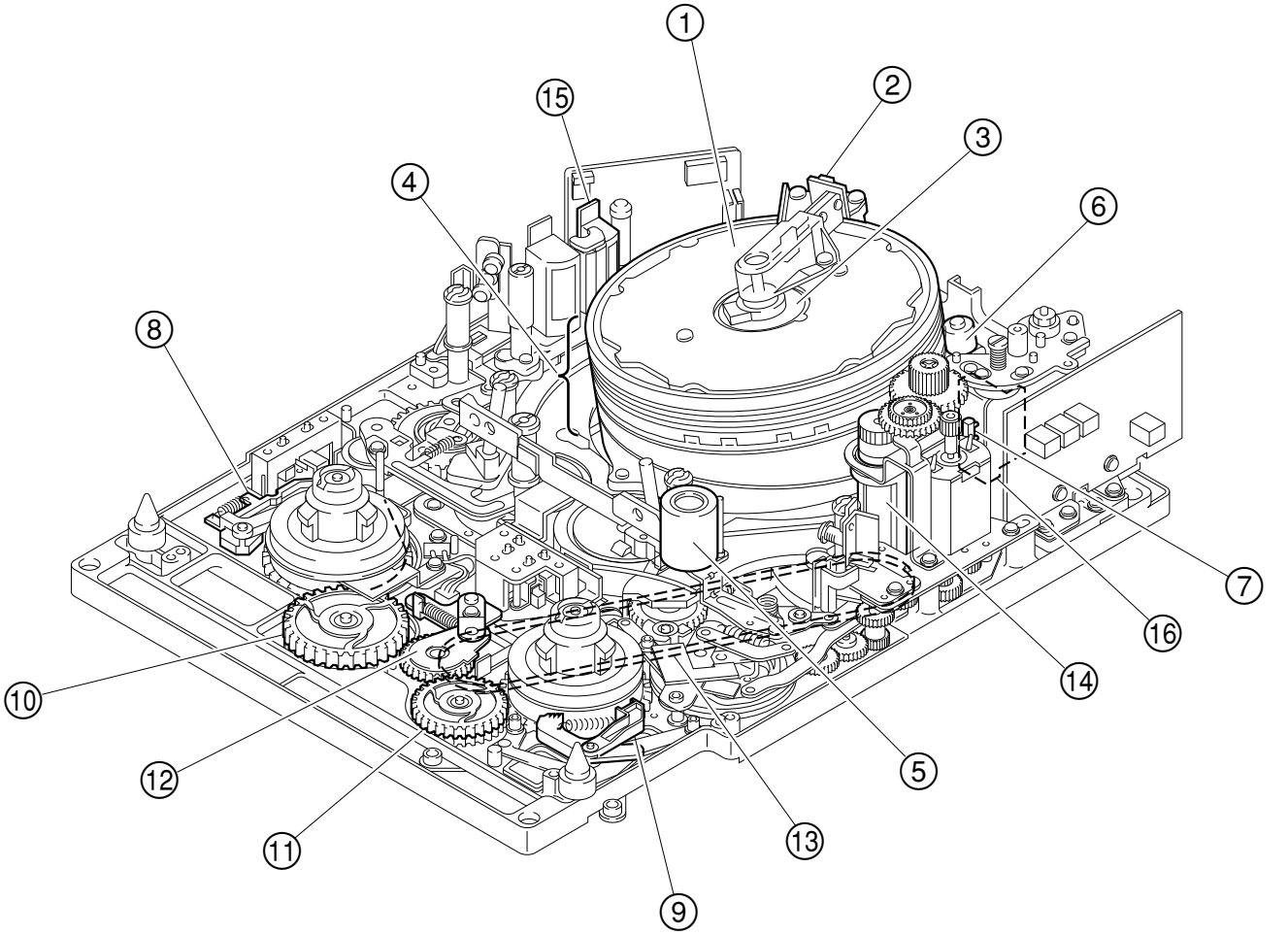
MODE A : DRUM RUNNING METER
MODE B : TAPE RUNNING METER

◇ : Check ☆: Replacement

No.	Item	MODE	Inspection Hours (H)								Replacement Part		
			500	1000	1500	2000	2500	3000	3500	4000	Part Discription	Part No.	Qty.
①	Upper drum assembly	A	☆	☆	☆	☆	☆	↓	☆	☆	Upper drum assembly (DHR-04-R)	A-8316-738-	1
②	Brush assembly for slip ring	A	—	☆	—	☆	—	↓	—	☆	Brush assembly (RP)	A-8263-856-	1
③	Slip ring assembly	A	—	☆	—	☆	—	↓	—	☆	Slip ring assembly (RP)	A-8263-855-	1
④	Drum assembly	A	—	—	—	—	—	☆	—	—	Drum assembly (DHH-04A-R)	A-8316-736-	1
⑤	Drum assembly	B	☆	☆	☆	☆	☆	☆	☆	☆	Pinch roller	X-3678-926-	1
⑥	HC roller for video head	A	☆	☆	☆	☆	☆	☆	☆	☆	V cleaning roller assembly	X-3167-281-	1
⑦	Cleaning brush for CUE head	A	—	☆	—	☆	—	☆	—	☆	CUE brush	3-681-778-	1
⑧	Tension regulator assembly	B	—	☆	—	☆	—	☆	—	☆	Tension regulator band assembly	X-3678-114-	1
⑨	T soft brake assembly	B	—	☆	—	☆	—	☆	—	☆	T soft brake assembly	X-3678-096-	1
⑩	S idler assembly	B	—	☆	—	☆	—	☆	—	☆	S idler assembly	A-8278-249-	1
⑪	T idler assembly	B	—	☆	—	☆	—	☆	—	☆	T idler assembly	A-8278-352-	1
⑫	Swing gear assembly	B	—	☆	—	☆	—	☆	—	☆	Gear assembly	A-8278-034-	1
⑬	Timing belt	B	—	—	—	—	—	☆	—	—	Timing belt	3-679-723-	1
⑭	Capstan motor	B	—	—	—	—	—	☆	—	—	DC motor SCV-0702A	8-835-534-01	1
⑮	CTL head	B	—	—	—	—	—	☆	—	—	CTL head PS244-21D	8-825-779-72	1
⑯	CUE head	B	—	—	—	—	—	☆	—	—	AU head PS244-2103L	8-825-779-61	1
⑰	Cassette compartment	B	—	—	—	—	—	☆	—	—	Cassette compartment (RP)	A-8318-064-	1

- Check to see occasionally if the eye cap of the view finder and the CRT are in good shape. Replace them if necessary.
- Replace the lithium battery on the TC-75 board once every 5 years.
- Replace the DC fan (P/N A-8278-742-) once every 2 years.
- As parts such as caps, switch covers, and pads may crack or break with time, check them occasionally and replace them if necessary.


17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Section 8
Spare Parts

Place an order of parts required using part numbers and part designations given in Section 8-2. Spare Parts List.

8-1. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP(Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Units Representation

The following represented units are changed or omitted in writing.

Units		Representation
Capacitance	μF	uF
Inductance	μH	uH
Resistance	Ω	Abbreviation
Temperature	°C	XXX-DEG-C

8-2. Spare Parts List

Mechanical Block

Part No.	SP	Description
A-8316-736-A	s	DRUM ASSY DHH-04A-R
A-8316-738-A	s	UPPER DRUM ASSY DHR-04-R
A-8318-064-A	s	CASSETTE COMPARTMENT ASSY(RP)
A-8263-855-A	o	RING ASSY (RP), SLIP
A-8263-856-F	s	BRUSH ASSY (RP)
A-8278-034-F	o	GEAR ASSY
A-8278-249-A	s	IDLER ASSY, S
A-8278-352-A	s	IDLER ASSY, T
X-3167-281-3	s	ROLLER ASSY, V CLEANING
X-3678-096-4	s	BRAKE ASSY, T SOFT
X-3678-114-2	s	BAND ASSY, TENSION REGULATOR
X-3678-926-1	s	PINCH ROLLER ASSY
3-679-723-01	s	BELT, TIMING
3-681-778-02	s	BRUSH, CUE
8-825-779-61	s	HEAD, AU PS244-2103L
8-825-779-72	s	HEAD, CTL (PS244-21D)
8-835-534-01	s	MOTOR, DC (SCV0702A)

Exterior Part

Part No.	SP	Description
A-8278-288-B	s	PAD ASSY, SHOLDER
X-3679-527-1	o	LID ASSY, FRONT
3-186-442-01	o	RING, MOUNT
3-610-515-02	s	RUBBUR (G-IN), DROP PROTECTION
3-610-575-02	o	CAP (A), BNC
3-610-576-02	o	CAP (B), BNC

Plug-in Board

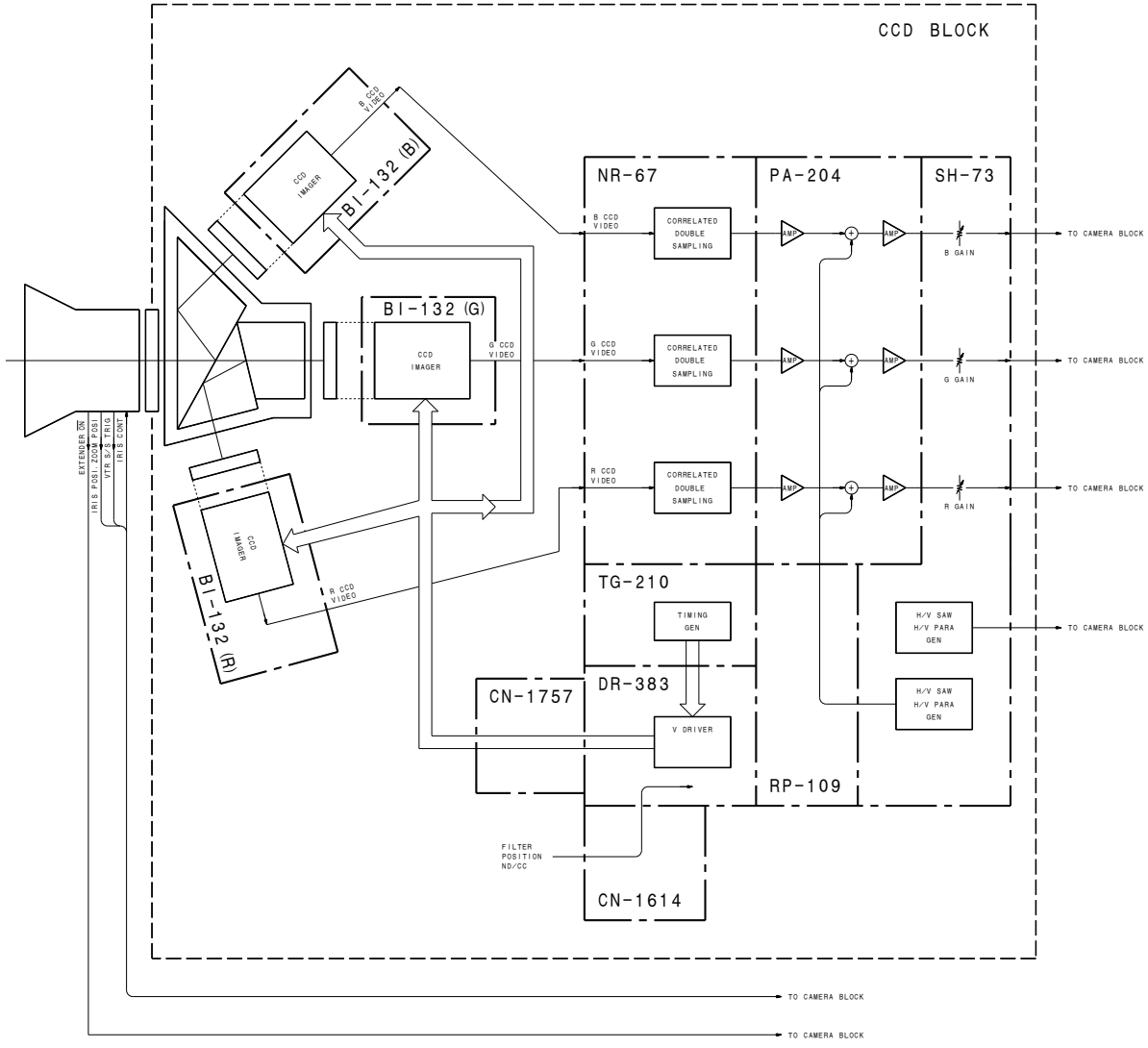
Part No.	SP	Description
A-8316-492-A	o	MOUNTED CIRCUIT BOARD, EN-134
A-8316-493-A	o	MOUNTED CIRCUIT BOARD, ENC-44
A-8316-494-A	o	MOUNTED CIRCUIT BOARD, DEC-95
A-8316-495-A	o	MOUNTED CIRCUIT BOARD, VN-11
A-8316-497-A	o	MOUNTED CIRCUIT BOARD, SY-247
A-8316-498-A	o	MOUNTED CIRCUIT BOARD, SV-185
A-8316-555-A	o	MOUNTED CIRCUIT BOARD, AD-145
A-8316-556-A	o	MOUNTED CIRCUIT BOARD, DA-127
A-8316-557-A	o	MOUNTED CIRCUIT BOARD, DPR-98
A-8316-559-A	o	MOUNTED CIRCUIT BOARD, IF-667
A-8316-569-A	o	MOUNTED CIRCUIT BOARD, VA-180
A-8316-570-A	o	MOUNTED CIRCUIT BOARD, VDA-40
A-8316-579-A	o	MOUNTED CIRCUIT BOARD, RE-145
A-8316-580-A	o	MOUNTED CIRCUIT BOARD, SG-255
A-8316-762-A	o	MOUNTED CIRCUIT BOARD, EQ-69

Mounted/Printed Circuit Board

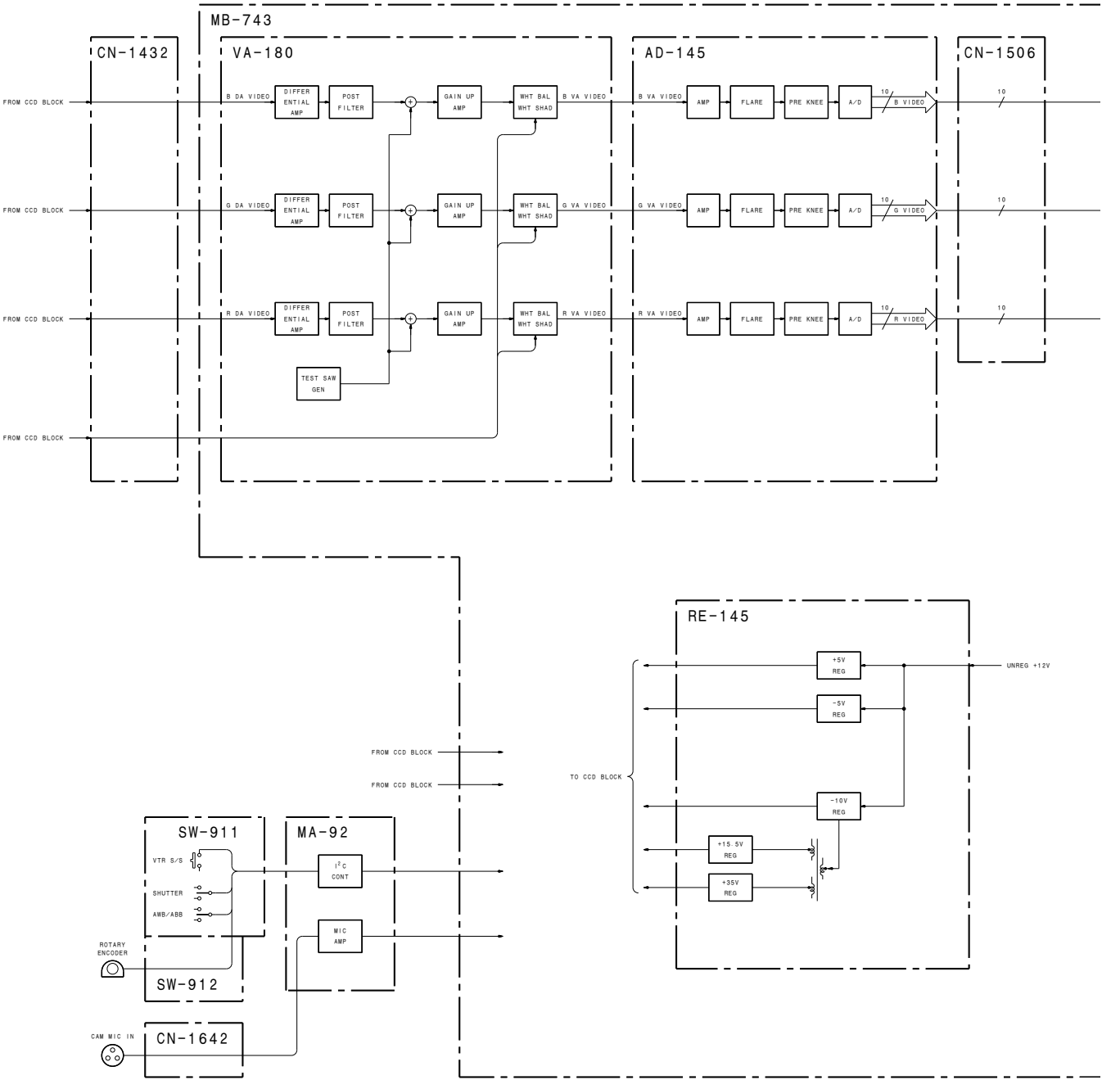
Part No.	SP	Description
A-8263-156-A	o	MOUNTED CIRCUIT BOARD, CTL-10
A-8263-157-A	o	MOUNTED CIRCUIT BOARD, CUE-2
A-8310-898-B	o	MOUNTED CIRCUIT BOARD, SE-275
A-8315-182-A	o	MOUNTED CIRCUIT BOARD, VF-68
A-8315-183-A	o	MOUNTED CIRCUIT BOARD, DF-56
A-8315-184-A	o	MOUNTED CIRCUIT BOARD, VR-240
A-8316-478-A	o	MOUNTED CIRCUIT BOARD, CN-1482
A-8316-483-A	o	MOUNTED CIRCUIT BOARD, MB-743
A-8316-487-A	o	MOUNTED CIRCUIT BOARD, CN-1457
A-8316-489-A	o	MOUNTED CIRCUIT BOARD, CN-1483
A-8316-491-A	o	MOUNTED CIRCUIT BOARD, CO-30
A-8316-496-A	o	MOUNTED CIRCUIT BOARD, TC-97
A-8316-499-A	o	MOUNTED CIRCUIT BOARD, HN-243
A-8316-511-A	o	MOUNTED CIRCUIT BOARD, CP-319
A-8316-519-A	o	MOUNTED CIRCUIT BOARD, HP-90
A-8316-532-A	o	MOUNTED CIRCUIT BOARD, CN-1432
A-8316-548-A	o	MOUNTED CIRCUIT BOARD, SW-911
A-8316-549-A	o	MOUNTED CIRCUIT BOARD, SW-912
A-8316-551-A	o	MOUNTED CIRCUIT BOARD, CN-1506
A-8316-552-A	o	MOUNTED CIRCUIT BOARD, CN-1507
A-8316-553-A	o	MOUNTED CIRCUIT BOARD, CN-1508
A-8316-565-A	o	MOUNTED CIRCUIT BOARD, PA-204
A-8316-567-A	o	MOUNTED CIRCUIT BOARD, SH-68
A-8316-571-A	o	MOUNTED CIRCUIT BOARD, DU-19
A-8316-735-A	o	MOUNTED CIRCUIT BOARD, MA-92
A-8316-757-A	o	MOUNTED CIRCUIT BOARD, PS-483
A-8317-151-A	o	MOUNTED CIRCUIT BOARD, CN-1642
A-8320-784-A	o	MOUNTED CIRCUIT BOARD, CN-1757
A-8320-974-A	o	MOUNTED CIRCUIT BOARD, DR-383
A-8320-975-A	o	MOUNTED CIRCUIT BOARD, NR-67
A-8320-976-A	o	MOUNTED CIRCUIT BOARD, RP-109
A-8320-977-A	o	MOUNTED CIRCUIT BOARD, SH-73
A-8320-978-A	o	MOUNTED CIRCUIT BOARD, TG-210
1-652-769-12	o	PRINTED CIRCUIT BOARD, KY-293
1-652-770-13	o	PRINTED CIRCUIT BOARD, VR-175

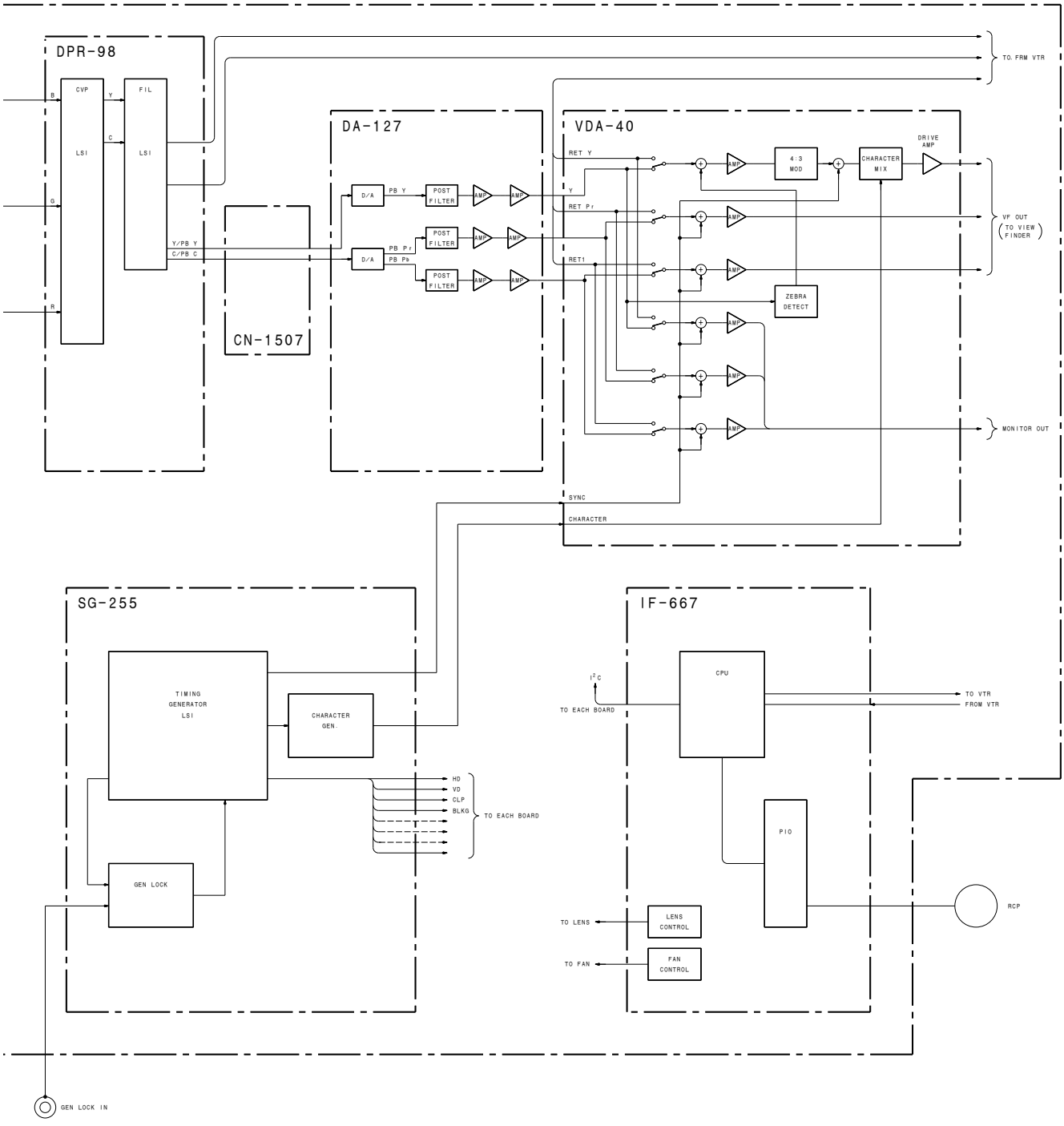
Section 9
Overall Block Diagrams

9-1. Camera Block



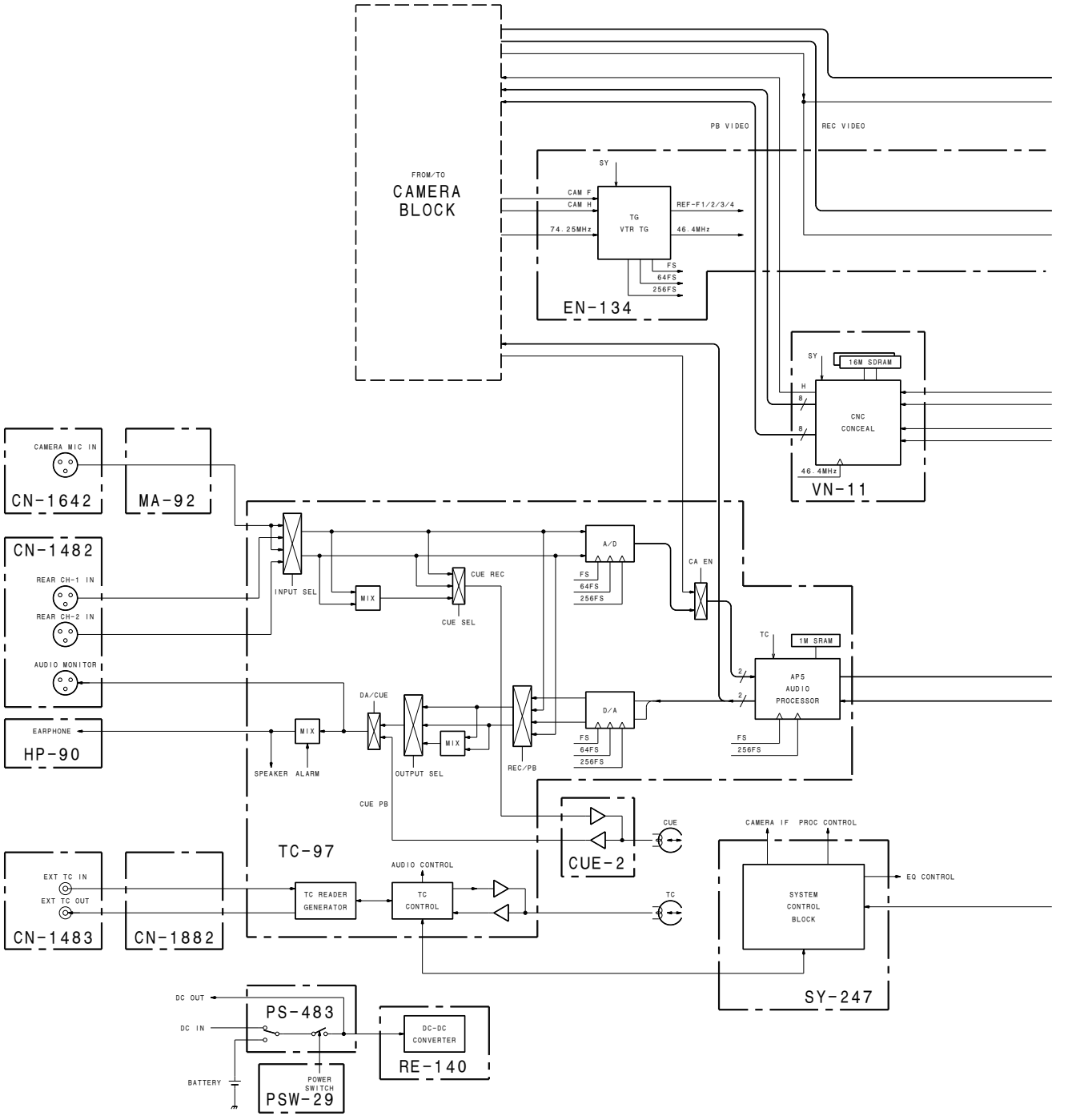
Camera Block (1/2)
Overall


MB-743
CN-1432
VA-180
AD-145
CN-1506
FROM CCD BLOCK
FROM CCD BLOCK
FROM CCD BLOCK
FROM CCD BLOCK
B DA VIDEO
G DA VIDEO
R DA VIDEO
DIFFERENTIAL AMP
POST FILTER
GAIN UP AMP
WHT BAL WHT SHAD
B VA VIDEO
G VA VIDEO
R VA VIDEO
AMP
FLARE
PRE KNEE
A/D
10
B VIDEO
G VIDEO
R VIDEO
TEST SAW GEN
RE-145
+5V REG
-5V REG
-10V REG
+15.5V REG
+35V REG
UNREG +12V
TO CCD BLOCK
FROM CCD BLOCK
FROM CCD BLOCK
SW-911
MA-92
VTR S/S
SHUTTER
AWB/ABB
I²C CONT
MIC AMP
ROTARY ENCODER
SW-912
CAM MIC IN
CN-1642



Camera Block (2/2)
Overall

9-2. VTR Block


FROM/TO
CAMERA
BLOCK
PB VIDEO
REC VIDEO
SY
CAM F
CAM H
74.25MHz
TG
VTR TG
REF-F1/2/3/4
46.4MHz
FS
64FS
256FS
EN-134
SY
16M SDRAM
H
8
8
CNC
CONCEAL
46.4MHz
VN-11
CAMERA MIC IN
CN-1642
MA-92
CN-1482
REAR CH-1 IN
REAR CH-2 IN
AUDIO MONITOR
EARPHONE
HP-90
INPUT SEL
MIX
CUE REC
CUE SEL
A/D
FS
64FS
256FS
CA EN
TC
1M SRAM
AP5
AUDIO
PROCESSOR
2
2
FS
256FS
DA/CUE
D/A
FS
64FS
256FS
MIX
REC/PB
SPEAKER ALARM
OUTPUT SEL
CUE PB
TC-97
CUE
CUE-2
CAMERA IF PROC CONTROL
EQ CONTROL
SYSTEM
CONTROL
BLOCK
SY-247
AUDIO CONTROL
TC
CONTROL
TC READER
GENERATOR
TC
EXT TC IN
EXT TC OUT
CN-1483
CN-1882
DC OUT
DC IN
PS-483
DC-DC
CONVERTER
RE-140
BATTERY
POWER
SWITCH
PSW-29

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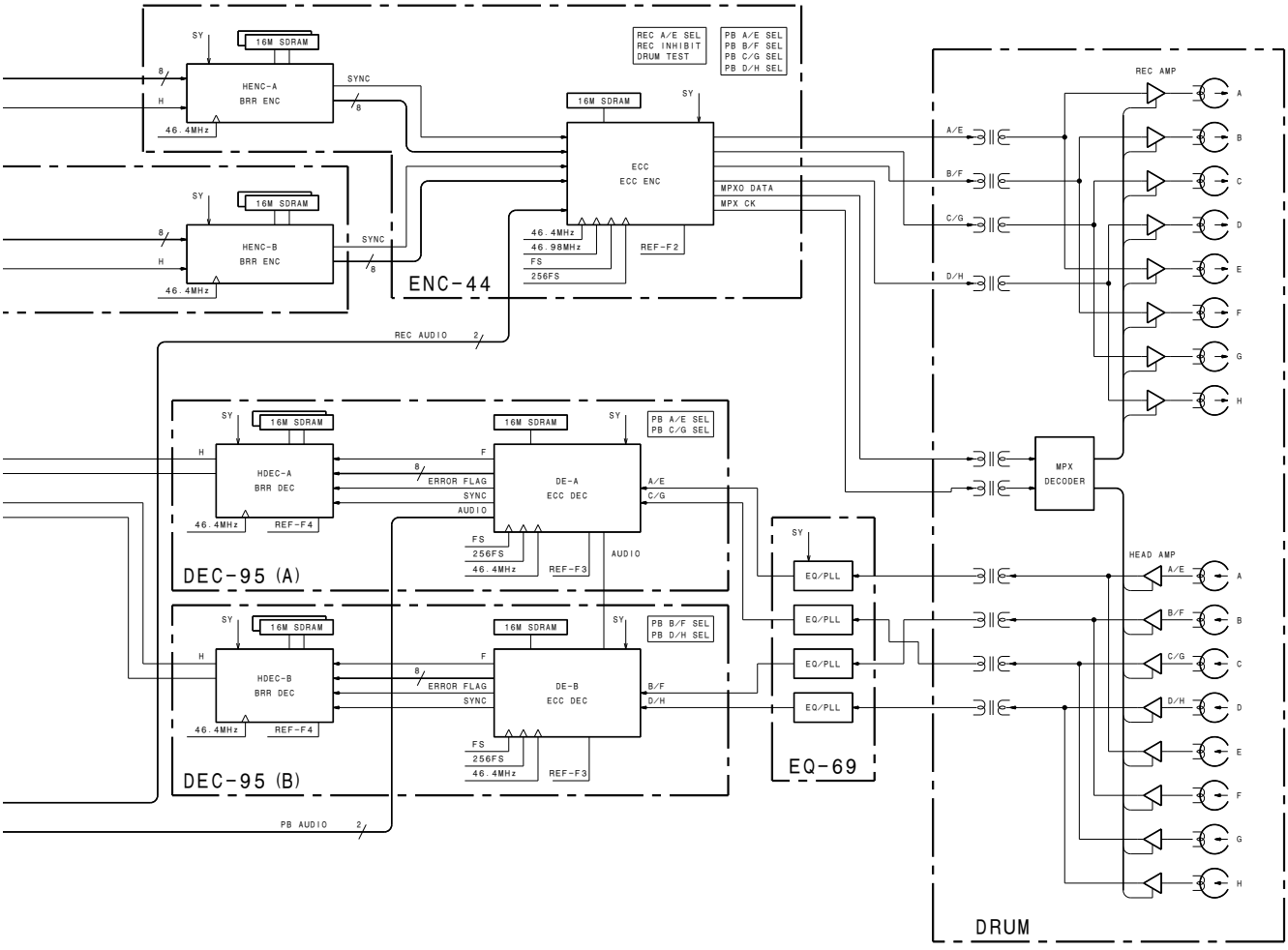

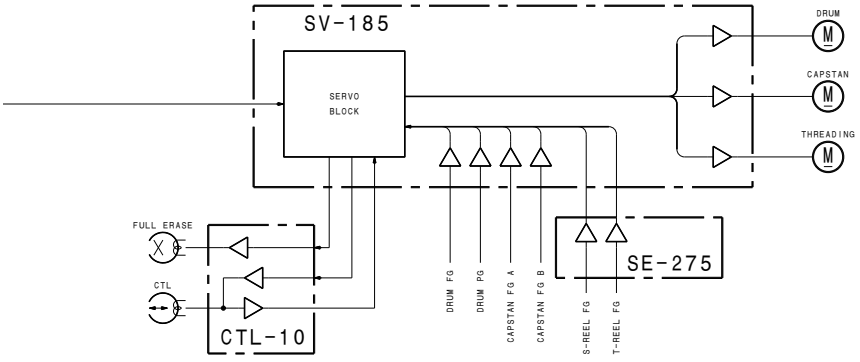

VTR Block
Overall

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